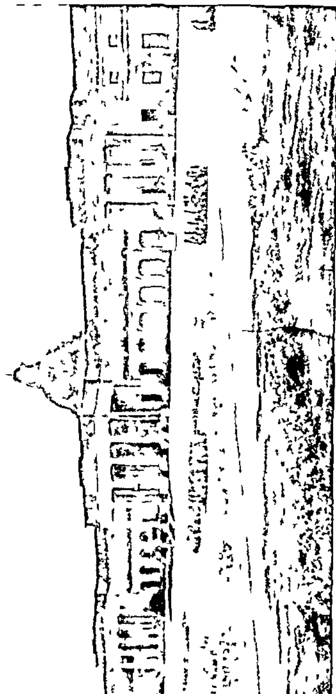


THOMASON
COLLEGE OF CIVIL ENGINEERING
ROORKEE, U. P.

CALENDAR
1943-44



ALLAHABAD:
SUPERINTENDENT, PRINTING AND STATIONERY, UNITED PROVINCES, INDIA
1944



Convocation President with the Members of the Staff [illegible]

CONTENTS

THOMASON COLLEGE OF CIVIL ENGINEERING

CALENDAR, 1943–44 SESSION

General and Office

OCTOBER, 1943

Date	Days of week	General and Office
1	F	C E class III year, O S class I and II years and Draftsman classes start
2	S	Rent roll to the Accountant General, United Provinces. *Id ul Fitr*
3	S	
4	M	
5	T	
6	W	
7	Th	
8	F	
9	S	*Dasehra*
10	S	
11	M	
12	T	
13	W	
14	Th	
15	F	
16	S	
17	S	
18	M	
19	T	
20	W	
21	Th	
22	F	
23	S	
24	S	
25	M	
26	T	
27	W	
28	Th	*Diwali.*
29	F	
30	S	
31	S	

NOVEMBER, 1943

Date	Days of week	General and Office
1	M	Rent roll to the Accountant General United Provinces
2	T	
3	W	
4	Th	
5	F	
6	S	
7	S	
8	M	
9	T	
10	W	
11	Th	
12	F	
13	S	
14	S	
15	M	
16	T	
17	W	
18	Th	
19	F	
20	S	
21	S	
22	M	
23	T	
24	W	
25	Th	
26	F	
27	S	
28	S	
29	M	Mid Sessional Examination of Civil Engineer class 2nd year starts
30	T	

DECEMBER, 1943

Date	Days of week	General and Office
1	W	Rent roll to the Accountant General, United Provinces
2	Th	
3	F	
4	S	
5	S	
6	M	Civil Engineering class II year Survey Camp starts
7	T	
8	W	*Id uz Zuha*
9	Th	
10	F	
11	S	
12	S	
13	M	
14	T	
15	W	
16	Th	
17	F	
18	S	
19	S	
20	M	
21	T	*Civil Engineer class 2nd year return from Survey Camp on the evening and submit Survey plates. Christmas Vacation commences.
22	W	
23	Th	
24	F	
25	S	
26	S	
27	M	
28	T	
29	W	
30	Th	
31	F	

JANUARY, 1944

Date	Days of week	General and Office
1	S	*New Year's Day.*
2	S	Rent roll to the Accountant General United Provinces
3	M	Civil Engineer class 2nd year starts their fourth term
4	T	
5	W	
6	Th	*Moharrum* (6–7)
7	F	
8	S	
9	S	
10	M	Civil Engineer class 1st year and Overseer class 1st and 2nd year Mid Sessional Examination starts.
11	T	
12	W	
13	Th	
14	F	
15	S	
16	S	
17	M	
18	T	
19	W	
20	Th	
21	F	
22	S	
23	S	
24	M	
25	T	
26	W	
27	Th	
28	F	
29	S	
30	S	*Basant Panchmi*
31	M	

FEBRUARY, 1944

Date	Days of week	General and Office
1	T	Rent roll to the Accountant General, United Provinces.
2	W	
3	Th	
4	F	
5	S	
6	S	
7	M	
8	T	
9	W	Sports day
10	Th	
11	F	
12	S	
13	S	
14	M	
15	T	
16	W	
17	Th	
18	F	
19	S	
20	S	
21	M	
22	T	*Shiva Ratri*
23	W	
24	Th	
25	F	
26	S	Civil Engineer class 3rd year finish their 5th term and a week's preparatory leave till March 4, 1944
27	S	
28	M	
29	T	

MARCH, 1944

Date	Days of week	General and Office
1	W	Rent roll to the Accountant General, United Provinces
2	Th	
3	F	
4	S	
5	S	Final examination Civil Engineer class starts
6	M	
7	T	
8	W	*Bara Wafat.*
9	Th	
10	F	*Holi*
11	S	*Holi*
12	S	
13	M	
14	T	
15	W	
16	Th	
17	F	Minor Project Civil Engineer 3rd year handed out.
18	S	
19	S	
20	M	
21	T	
22	W	Count certificate forms to be supplied to officer
23	Th	Course of Study and Syllabus to be sent to the Director of Public Instruction, United Provinces
24	F	Registration of abbreviated telegraphic address.
25	S	Letter to Director of Public Instruction, United Provinces, regarding training of apprentice overseers
26	S	
27	M	
28	T	
29	W	
30	Th	Figures of educated employed and unemployed to be sent to the Director of Public Instruction,
31	F	Inces

DECEMBER, 1943

Date	Days of week	General and Office
1	W	Rent roll to the Accountant General, United Provinces
2	Th	
3	F	
4	S	
5	S	
6	M	Civil Engineering class II year Survey Camp starts
7	T	
8	W	*Id u Zuha*
9	Th	
10	F	
11	S	
12	S	
13	M	
14	T	
15	W	
16	Th	
17	F	
18	S	
19	S	
20	M	
21	T	*Civil Engineer class 2nd year return from Survey Camp on the evening and submit Survey plates Christmas Vacation commences.
22	W	
23	Th	
24	F	
25	S	
26	S	
27	M	
28	T	
29	W	
30	Th	
31	F	

JANUARY, 1944

Date	Days of week	General and Office
1	S	*New Year's Day*
2	S	Rent roll to the Accountant General, United Provinces
3	M	Civil Engineer class 2nd year [illegible] their fourth term.
4	T	
5	W	
6	Th	*Moharrum*
7	F	
8	S	
9	S	
10	M	Civil Engineer class 1st year and sec class 1st and 2nd year Sessional Examination starts.
11	T	
12	W	
13	Th	
14	F	
15	S	
16	S	
17	M	
18	T	
19	W	
20	Th	
21	F	
22	S	
23	S	
24	M	
25	T	
26	W	
27	Th	
28	F	
29	S	
30	S	*Basant Panchmi*
31	M	

FEBRUARY, 1944

Date	Days of week	General and Office
1	T	Rent roll to the Accountant General, United Provinces
2	W	
3	Th	
4	F	
5	S	
6	S	
7	M	
8	T	
9	W	Sports day
10	Th	
11	F	
12	S	
13	S	
14	M	
15	T	
16	W	
17	Th	
18	F	
19	S	
20	S	
21	M	
22	T	*Shiva Ratri*
23	W	
24	Th	
25	F	
26	S	Civil Engineer class 3rd year finish their 5th term and a week's preparatory leave till March 4 1944
27	S	
28	M	
29	T	

MARCH, 1944

Date	Days of week	General and Office
1	W	Rent roll to the Accountant General, United Provinces
2	Th	
3	F	
4	S	
5	S	Final examination Civil Engineer class starts
6	M	
7	T	
8	W	*Bara Wafat*
9	Th	
10	F	*Holi*
11	S	*Holi*
12	S	
13	M	
14	T	
15	W	
16	Th	
17	F	Minor Project Civil Engineer 3rd year handed out
18	S	
19	S	
20	M	
21	T	
22	W	Count certificate forms to be supplied to officer
23	Th	
24	[illegible]	
25	S	Letter to Director of Public Instruction, United Provinces, regarding training of apprentice overseers
26	S	
27	M	
28	T	
29	W	
30	Th	Figures of educated employed and unemployed to be sent to the Director of Public Instruction, United Provinces.
31	F	

APRIL, 1944

Date	Days of week	General and Office
1	S	*Ram Navami* Rent roll to the Accountant General United Provinces
2	S	
3	M	Preparatory leave Overseer class 2nd year
4	T	
5	W	
6	Th	
7	F	*Good Friday*
8	S	*Saturday before Easter* Minor Project III year Civil Engineer class handed in and Major project handed out
9	S	
10	M	*Easter Monday*
11	T	Overseer class Final Examination starts
12	W	
13	Th	
14	F	
15	S	Project to Overseer class handed out
16	S	
17	M	
18	T	
19	W	
20	Th	
21	F	
22	S	Civil Engineer class II year finish their fourth term and preparatory leave up to April 29 1944
23	S	
24	M	
25	T	
26	W	
27	Th	Final examination II year Overseer class starts
28	F	
29	S	
30	S	

MAY, 1944

Date	Days of week	General and Office
1	M	Sessional Examination Civil Engi class 2nd year starts Rent roll to the Accountant Gene United Provinces
2	T	
3	W	
4	Th	
5	F	
6	S	
7	S	
8	M	Statistical return
9	T	
10	W	
11	Th	
12	F	
13	S	
14	S	Detailed statement of perman establishment to be sent the Accountant General Un Provinces Publication of results of Civil Engi class 2nd year
15	M	Schedule of new demands Ret of excess tents
16	T	*5th term for the present Civil Engi class II year starts and conti up to 30th June and after the of the vacation*
17	W	
18	Th	
19	F	
20	S	
21	S	
22	M	
23	T	
24	W	
25	Th	
26	F	
27	S	Overseer class Major project handed
28	S	
29	M	Entrance examination of Civil Eng *class starts*
30	T	
31	W	

JUNE, 1944

Date	Days of week	General and Office
1	Th	Entrance examination of Draftsman class starts
2	F	Rent roll to the Accountant General, United Provinces
3	S	Entrance examinations of Overseer class start
4	S	
5	M	
6	T	
7	W	Sessional examinations of Civil Engineer class 1st year Overseer class 1st year and Draftsman class start
8	Th	
9	F	
10	S	
11	S	
12	M	
13	T	Convocation Day
14	W	
15	Th	
16	F	
17	S	
18	S	
19	M	
20	T	
21	W	Return of textile requirements to the Director of Public Instruction United Provinces
22	Th	
23	F	
24	S	
25	S	
26	M	
27	T	
28	W	
29	Th	
30	F	Publication of results.

JULY, 1944

Date	Days of week	General and Office
1	S	College closes for vacation
2	S	Rent roll to the Accountant General, United Provinces.
3	M	
4	T	
5	W	
6	Th	
7	F	
8	S	
9	S	
10	M	
11	T	
12	W	
13	Th	
14	F	
15	S	
16	S	
17	M	
18	T	
19	W	
20	Th	
21	F	
22	S	
23	S	
24	M	
25	T	
26	W	
27	Th	
28	F	
29	S	
30	S	
31	M	

\UGUST, 1944

General and Office

ent roll to the Accountant General United Provinces

tatement of non gazetted officers over 55 years of age

hab i Barat

ivil Engineer classes start

'anam Ashtami

SEPTEMBER, 1944

Date	Days of week	General and Office
1	F	Rent roll to the Accountant General, United Provinces
2	S	
3	S	
4	M	
5	T	
6	W	
7	Th	
8	F	
9	S	
10	S	
11	M	
12	T	
13	W	
14	Th	
15	F	*Last Friday of Ramzan*
16	S	
17	S	
18	M	
19	T	
20	W	*Id ul Fitr*
21	Th	
22	F	
23	S	
24	S	
25	M	*Dasehra*
26	T	*Dasehra*
27	W	*Dasehra*
28	Th	
29	F	
30	S	

OCTOBER, 1944

Date	Days of week	General and Office
1	S	
2	M	Overseer and Draftsman classes start Rent roll to the Accountant General, United Provinces
3	T	
4	W	
5	Th	
6	F	
7	S	
8	S	
9	M	
10	T	
11	W	
12	Th	
13	F	
14	S	
15	S	
16	M	*Diwali.*
17	T	
18	W	
19	Th	
20	F	
21	S	
22	S	
23	M	
24	T	
25	W	
26	Th	
27	F	
28	S	
29	S	
30	M	
31	T	

NOVEMBER, 1944

Date	Days of week	General and Office
1	W	Rent roll to the Accountant General, United Provinces.
2	Th	
3	F	
4	S	
5	S	
6	M	
7	T	
8	W	
9	Th	
10	F	
11	S	
12	S	
13	M	
14	T	
15	W	
16	Th	
17	F	
18	S	
19	S	
20	M	
21	T	
22	W	
23	Th	
24	F	
25	S	
26	S	*Id ul-Zuha.*
27	M	
28	T	
29	W	
30	Th	

THOMASON COLLEGE OF CIVIL ENGINEERING

Thomason College Advisory Council

1. S. T. H MUNSEY, Esq., B SC., I.S.E, Chief Engineer., Irrigation Branch, Public Works Department, United Provinces—*President*.
2. MAHABIR PRASAD, Esq., B.SC, I S.E., Chief Engineer, Public Works Department, Buildings and Roads Branch, United Provinces.
3. The Director of Public Instruction, United Provinces.
4. Major Raja DURGA NARAIN SINGH Sahib, M.L.A., of Tirwa, district Farrukhabad. } Representative of the United Provinces Legislative Assembly.
5. Major Nawab MUHAMMAD JAMSHED ALI KHAN Sahib, M.B.E, M L.A., Baghpat, Meerut. } Representative of the United Provinces Legislative Assembly.
6. G. LACEY, Esq., B.SC, M.INST. C.E., Representative of the Institution of Civil Engineers, London S. W. 1.
7. H. G. TRIVEDI, Esq., M. I E., Representative of the United Provinces Branch of Institution of Engineers, India.
8. Dr. N. N. GODBOLE, M.A., B.SC., PH.D. (Berlin), Professor of Industrial Chemistry and Dean of the Faculty of Technology, Benares Hindu University, Benares, Representative of University Education, nominated by United Provinces Government.
9. The PRINCIPAL, Thomason College, Roorkee—*Secretary*.

COLLEGE STAFF

September, 1943

RAI BAHADUR MADAN GOPAL SARDANA B A, M I E (IND),
Principal

KASHI SARAN MISRA, C E (Roorkee)
Personal Assistant to Principal and Superintendent College Office

DEPARTMENTS

Civil Engineering

R B M C BIJAWAT B A M I E (IND)	Professor of Civil Engineering
VINAYAK GOVIND GARDE M SC (ENGRG) (MANCH), A M I E M R S I	Assistant Professor of Civil Engineering
K L BHATTACHARYA, M SC (ALL)	Lecturer in Chemistry
P L SHARMA, G D ARCH (BOM), F R I B A, F I I A, M R S I	Lecturer in Drawing
S R SINGH, B SC (ENG BRISTOL) A M I E	Lecturer in Surveying
JAI KRISHNA, B SC, C E (Roorkee)	Lecturer in Civil Engineering

Applied Mechanics and Mathematics Department

B D PURI, M A (CANTAB) formerly Scholar of Pembroke College Cambridge	Professor of Pure and Applied Mechanics and Mathematics
ANAND SARUP, M SC (ALL)	Lecturer in Physics

Mechanical and Electrical Engineering

ZAKI UD-DIN AHMAD, B SC HONS, D I C, PH D (ENGINEERING) LONDON, A M I E.E	Officiating Assistant Professor of Mechanical and Electrical Engineering.
JAGDAMBA PRASAD, B SC (ENGRG), DIP E I C (GLASGOW) A M I E	Lecturer in Mechanical Engineering
NAND SINGH ..	Foreman Moulder.
P C DUTT	Foreman Mechanic.
RAFIQ AHMAD ..	Foreman Carpenter

Overseer Class and Draftsman Class

P C SEN GUPTA, B SC (ALL)	Head Master.
Vacant	Instructor.
JEWAN LAL	Instructor
REOTINANDAN	Instructor.

Office

MOHAN LAL BHARGAVA ..	Head Clerk.
GOVIND PRASAD	Accountant.

Library

M. M RAFIQUE, B SC, DIPLOMATE IN LIBRARY SCIENCE	Librarian

and candidates for it must not be under 17 or above 25 years of age on 1st June immediately preceding the competitive entrance examination, which is held annually in June The Overseer Class course is of two years duration and the age limits in this case are 16 and 25 years under the same conditions The Draftsman Class course is usually of three years duration and candidates for this class must not be under 15 or above 21 years of age on 1st June immediately preceding the entrance examination, the qualifying educational standard for the entrance examination of the Draftsman Class is much lower than for the other classes and the entrance examination standard also is lower

The Civil Engineer Class course approximates to the degree *standard in engineering of a British university* The Thomason College grants a diploma on the successful completion of the course The first year of the course is devoted to Applied Mathematics Surveying and Drawing Science and Elementary Civil and Mechanical Engineering the second year to advanced Mathematics, Theory of Structures Surveying and Civil, Mechanical and Electrical Engineering, and the third year to mainly Civil Engineering, its designs and projects and to Mechanical and Electrical Engineering An important test of a student's practical ability takes place in the third year, in which, after the preliminary projects, which are set, corrected and criticized by internal examiners, a two months' engineering project is set by an outside examiner The third year students go into camp for the first portion of this project period and each student works alone across country with his own instruments (theodolite, level and plane table), and his gang of men, returning to Roorkee when he has finished his work in the field to complete his report designs, calculations, estimates and survey plates*

*Note—For the duration of the war the course has been curtailed from three to two years

This test which carries a large number of marks, effectually eliminates the pure theorist from the upper half of the class and brings to the fore the man of common sense, ability, character and initiative The project work is preceded by the final examination which for this class takes place in the last week of March The Overseer Class students also execute at the end of second year a small project in Roorkee to test their practical ability and application of principles which they learn during their two years course This project is also preceded by the final examination which for this class takes place in the last week of April

For other classes sessional examinations are held in June before the end of each College Session also mid sessional examination for all classes are held by the first week of February each year Every student is required to obtain a certain qualifying standard (see pages 148 and 186) for promotion to the next class The college session usually begins on 16th October and usually ends on 15th July Each session is followed by a long vacation of three months during the unhealthy monsoon period when outdoor work would be impossible During each session the College closes for ten days at Christmas

According to the total number of marks obtained details of which are given on pages 148 and 186 the following awards are made to students who successfully complete the College course

Civil Engineer class students	An Honours or Ordinary Diploma
Overseer class students	A Higher or Ordinary Certificate
Draftsman class students	Certificate as Draftsman

A successful Civil Engineer class student is usually posted as an unpaid apprentice to the Public Works Department in th

Province of his domicile for one year to learn practical methods of work and the control of labour

Overseer class students of United Provinces domicile are offered unpaid apprenticeships in the Public Works Department At the end of the year of apprenticeship, appointments to the Subordinate Engineering Service of the United Provinces depend on vacancies

An employment register is maintained for the benefit of those students who do not obtain employment or are out of employment

The probable current monthly expenses of a student are shown at the end of the circular of each class A number of scholarships are awarded in the Civil Engineer Class, Overseer Class and Draftsman Class

The Thomason College main building is large and spacious It has laboratories, classrooms and model rooms for the various departments The equipment of instruments and apparatus is complete and as up to date as funds permit The College Workshops are also well fitted with machinery and apparatus The College has its own Dairy, Hospital, Book Depot, Meteorological Observatory and an electrical supply system giving current for electric lights, fans and motors in all buildings The drinking water is pumped direct from tube-wells into overhead reservoirs All the pumps are operated electrically The Civil Engineer Class and Overseer Class students and some of the Draftsman Class students live in Hostels grouped in the rear of the College Each student of the Civil Engineer Class has a furnished room and bathroom The Civil Engineer Class students have both a club and a common mess To join the former is compulsory and to join the latter

NOTE—As an emergency measure each room is now shared by two Civil Engineer class students

is optional. Most of the staff have detached bungalows with gardens. A plan of the College and a map of the estate appear at the end of this calendar. Many facilities for recreation are provided for the students There are a number of tennis courts, squash racquets courts, football and hockey grounds, a cricket ground and a large boat club on the Ganges Canal with rowing and sculling boats. The students are encouraged to take part in all games and sports in order to fit them for their profession and also for their own benefit. Athletic Sports and a Regatta are held annually and all Civil Engineer Class students are now enrolled in the Indian Auxiliary Force or the University Training Corps for military training, while the Overseer Class students perform physical drill under a military instructor. Physical drill is compulsory for all students.

HISTORY OF THE THOMASON COLLEGE

THE Thomason College the oldest engineering college in India owes its birth to the waters of Mother Ganges With out the River Ganges there would have been no canal of that name and, without the canal no college at Roorkee The Ganges Canal soon reached maturity but its offspring, the Thomason College planned by men of wisdom and foresight grew steadily from the smallest beginnings till it attained the proud position which it now holds as one of the leading educational institutions of the East *with great traditions and* a reputation second to none

The establishment of an engineering college at Roorkee was suggested to the Honourable James Thomason, Lieut-Governor of the North West Provinces about 1846 by Colonel Cautley of the Bengal Engineers who had been Superinten dent General of Canals since 1836 and was busily engaged in the scheme first contemplated by Colonel Colvin of the same Corps for the employment of the waters of the Ganges for irrigation While there is no doubt that the immediate require ments of the Ganges Canal in engineer officers and subor dinates were chiefly responsible for the foundation of the Thomason College it is probable that broader issues also in fluenced the minds of Mr Thomason and his advisers and that an important point was the necessity for some systematic training for Civil Engineers in India or at least in Northern *India The Western Jumna Canals were commenced* in 1817 and the Eastern Jumna Canal in 1822 In 1847 the annual expenditure on establishment for these under takings was Rs 1 01 000 and on annual repairs

Rs 35 000 In Dehra Dun Rohilkhand and near Delhi works for drainage and irrigation were maintained requiring skilful superintendence The roads from Jubbulpur to Mirzapur, the grand trunk roads from Calcutta to Delhi and from Agra to Bombay and the Land Revenue Settlement Survey had been completed It was apparent that there existed a large demand for skill in every branch of Civil Engineering To meet this demand there were officers of the Army European non commissioned officers and soldiers and Indians To make these men efficient agents the well educated Europeans lately arrived in the country required instruction in Indian languages and in the peculiarities of materials and construction in India The European soldiers required scientific instruction and the Indians from their local experience and ability to bear exposure to the climate, were likely to prove efficient instruments if they were well taught and inspired with a proper sense of responsibility

As early as the year 1845 Lieutenant Baird Smith of the Bengal Engineers then Superintendent of the Eastern Jumna Canal began training young Indians at Saharanpur in Civil Engineering for the grade of Sub Assistant Executive Engineer and in 1846 twenty candidates were admitted to this class In 1847 after the First Punjab War Lord Hardinge the Governor General determined on the vigorous prosecution of the Ganges Canal scheme This undertaking especially in the first few miles of its course was beset with great engineering difficulties Evidently it would tax to the utmost the skill industry and resources of the people and country The science that was necessary to construct a work of this magnitude would also be kept constantly in exercise for its maintenance, improvement and extension Immediate measures were necessary to provide a constant supply of well trained and experienced Engineers Out of this emergency, the Roorkee College arose, later to be known as the Thomason College

The circumstances which caused the selection of Roorkee as the site for the College were thus stated in the proposal made to the Governor General on September 23, 1847.

> The establishments now forming at Roorkee near the Solani Aqueduct on the Ganges Canal afford peculiar facilities for instructing Civil Engineers There are large workshops and most important structures in course of formation There are also a library and a model room Above all a number of scientific and experienced officers are constantly assembled on the spot or occasionally resorting thither These officers however all have their appropriate and engrossing duties to perform and cannot give time for that careful and systematic instruction which is necessary for the formation of an expert Civil Engineer On these accounts the Lieutenant Governor would propose the establishment at Roorkee of an institution for the education of Civil Engineers which should be under the direction of the Local Government in the Education department

The proposal obtained the immediate and cordial support of the Governor General in India On October 19, 1847 Lieutenant R Maclagan of the Engineers* was appointed Principal of the College and on November 25 of the same year a prospectus was issued, the establishment being fixed at a Principal a Headmaster an Architectural Drawing Master and two Indian Teachers The prospectus provided for three departments in the College The First Department was for candidates for appointment as Sub Assistant Civil Engineers It was laid down that they must be under 22 years of age must be able to read and write English easily and must have a knowledge of Geometry Algebra Mensuration Plane and Spherical Trigonometry Conic Sections and Mechanics The number to be admitted was 8 annually The Second Department was for European Non-commissioned Officers and

*Father of Sir Edward Maclagan, late Governor of the Punjab.

soldiers who had to pass an elementary test in Reading, Writing, simple Drawing and very easy Mathematics before admission The number of admissions was limited to 10 annually These soldiers were trained to become Overseers in the Public Works Department The Third Department was for young Indians desiring free instruction in Surveying, Levelling and Drawing These men were required to have some knowledge of Arithmetic and to be able to read and write Urdu. Admissions were limited to 16 annually and qualified men were given certificates on leaving the College Annual examinations were held for all classes It will be noticed that the lengths of the courses were not specified, but it is believed that the Second Department course lasted 6 months only

When Lieutenant R Maclagan was appointed Principal in October 1847, not only were there no students, but there was no College The first students were admitted on January 1, 1848, by the transfer of a few young Indians, who were being instructed by Major W E Baker of the Bengal Engineers, then Director of the Ganges Canal These men apparently joined the Third Department By August 1848, ten non commissioned officers and soldiers had joined the Second Department, which was then complete, but meanwhile, as no building was available, work was carried on in tents A very small building, the forerunner of the present Thomason College, was built for use during the hot weather of 1848 and was demolished later, when better accommodation was provided in the new College buildings This little building contained two classrooms (26′ × 32′), a Principal's Office 20 × 23′, a hall of the same size, and four small verandah corner rooms (10 × 12′) for the Headmaster, Drawing Master, Book Depot, and Store, with verandahs on all sides A plan of this miniature College—known then as the Roorkee College—hangs in the Thomason College corridor. The site of the building is unknown, but

presumably it was near the site of the existing College, possibly where the Principal's residence now stands Instructional work was interrupted, in the winter of 1848 49, by the Second Punjab War, when Lieutenant Maclagan and the military students were absent on service for about two months, or, as it was ter ely put, Marched for the frontier "

The year 1848 was an important one in the history of Roorkee In this year, 12 years after the first line of the Ganges Canal levels had been taken, Lord Hardinge then Governor General, recommended the commencement of work on the Canal scheme with the utmost vigour and the Ganges Canal may be said to originate from that time The Canal Foundry Workshops were also established at Roorkee by Major Allen of the Bengal Army in that year and students of the Roorkee College attended there for practical instruction In 1850, the number of Military students admitted to the College was increased to 15 annually and on April 7 1851, there were 50 students of all classes Forty two men had already passed out

The year 1851 really marks the birth of the Thomason College as it now is At the end of the Second Punjab War, the Roorkee College, with its then existing establishment and accommodation was barely adequate for the instruction of the students and was utterly inadequate to meet the exigencies of the occasion Mr Thomason at once grasped the situation and prepared a scheme for enlargement

This scheme provided for —

1st—The admission of officers, both of the Royal and East India Company's armies, to study at Roorkee in a class called the Senior Department

2nd—The superintendence and improvement of the village schools around Roorkee as feeders for the Third or Indian Department of the College

3rd—The establishment, in connexion with the College, of a Depot for Mathematical and Scientific instruments and of a workshop for their repair and manufacture.

4th—The formation of a Museum of Economic Geology.

5th—The erection of an Observatory for instruction.

6th—The maintenance of metal and stone printing presses with a book-binder's establishment and all the necessaries for the publication of scientific works with appropriate drawings and illustrations.

7th—The enlargement of the College buildings and establishment to meet all these purposes

8th—The doubling of the number of students in the Second and Third Departments.

The original cost of the College buildings, etc , was estimated at Rs 1,56,217 and the annual charge for the College at Rs 83 898

A valuable record of the origin of the Thomason College and the aims and objects for which it was established, is to be found in a pamphlet, dated October 3, 1851, drawn up by Mr Thomason, Lieutenant-Governor of the North-West Provinces The exact date of the commencement of the construction of the new College—afterwards called the Thomason College—is unknown, but it seems that the work must have been started in 1852 The officer who designed the main building was Lieutenant Price of the 1st Fusiliers, then employed on the Ganges Canal, who later became Chief Engineer, Hyderabad There is reason to believe that Lieutenant Price also supervised the work of construction, *vide* Frontispiece, Volume III, of Colonel Cautley's Report on the Ganges Canal It is very remarkable that a junior Infantry Officer should have been capable of designing and building so large an edifice

as the Thomason College and producing an example of Renaissance architecture which seems to be not unpleasing even to the eyes of professional architects, who have visited Roorkee in modern times The officers responsible for the selection and acquisition of the site for the Thomason College and its estate showed wonderful judgment and foresight They acquired in time 365 acres of land including the high ground on which the College itself was built facing the north, in which direction the main range of the Himalayas towers in snowy grandeur above the nearer hills and lesser ranges The land was fertile, the water supply ample and the locality healthy, while, within a mile or two some of the greatest engineering works in the world were in the process of construction It is recorded that the construction of the College was nearing completion in 1854 and that all the original buildings including the main building were completed in January 1856 so that a period of about four years was required for the work The front of the main building viewed from the north, was as it is at the present day except that there was no clock but there were no rooms where the present Library and Convocation Hall exist—only covered passages—and the rear of the quadrangle was open except for a small model room and museum block in the centre As time went on the College was enlarged By 1872 the Library and Convocation Hall had been built and by 1896 the rear of the College had been closed by providing rooms for Science Departments while still later a second storey was added over the south east corner to accommodate the Photo School of the College Press Nevertheless it can be said that the Thomason College was completed as then required in January 1856 though the site had not the beautiful trees which now provide welcome shade around its lawns and gardens

Until the year 1854 the institution at Roorkee continued to be known as the Roorkee College but in that year

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7 A College Museum was started, with models from England

8 An Observatory was sanctioned

9 A Gymnasium was sanctioned but was not provided till later

10 A soldiers garden and the grounds generally were laid out and improved

11 The Press was reorganized and enlarged

12 The young officers and non commissioned officers and privates of the Sappers stationed at Roorkee were required to attend the College as far as their duties would admit

Colonel R Maclagan R E the first Principal, retired in 1860 being succeeded by Captain E C S Williams, R E, who in turn was succeeded by Major J G Medley R E, in 1863 The latter held the post of Principal till 1870 For a few years there were no great changes but the College was expanding steadily In 1863 when the number of students had risen to 88 a Professor of Experimental Science was appointed In 1861 the College was affiliated (nominally) to the Calcutta University The course for the Senior and First Departments was extended to three years, unless a higher certificate was gained in two years Eight students were guaranteed appointments as Assistant Engineers and practically all officers from the Senior Department obtained employment Second Department students still remained only one year in the College and passed into the Public Works Department, Military students as 1st Grade English Civilians as 1st or 2nd Grade and Indians as 3rd Grade In 1866, a Mistry Class was formed and also an Officers' Surveying Class for a 7 months' course in Military Surveying Drawing and Field Engineering In 1868 an Indian Military Class (3rd Department) joined the College for a 2 years' course The names of the various classes were altered in 1870 by which time there were 231 students The Senior Department became the

"*Engineer Class*" (Military and Civil), while the Second Department became the *Upper Subordinate Class,*" and the Third Department the '*Lower Subordinate Class* " By 1870, the Staff had greatly increased and consisted of a Principal, two Assistant Principals a Professor of Experimental Science and a Professor of Drawing These officers were assisted by a staff of masters for the Upper Subordinate Class under a Head Master and another staff for the Lower Subordinate Class The increase in the number of students and in the strength of the staff, between the years 1863 and 1870 was remarkable By 1870, the Thomason College had become a large and important institution but very few Indians of good education entered it, indeed, between 1847 and 1873 only 17 Indians passed out from the Engineer Class or its equivalent, the remainder being Europeans

Major A M Lang R E replaced Colonel J. G Medley, R E ,' as Principal in 1871, and in the following year the Upper Subordinate Class course—up to then lasting one year only—was extended to two years In 1873, the Central Instrument Dépôt, located in the College, was transferred to the Canal Foundry and Workshops and a new Class for instruction of men of the Guides Corps in Surveying and Drawing was started About the year 1873, it became apparent that at last the more highly educated Indians had begun to realize the advantages of the Engineer Class, in which they could obtain an excellent education *gratis*, with the chance of a provision for life in a well paid and honourable profession This is shown by the fact that, between 1873 and 1875, sixteen Indians passed out of the Civil Engineer Class

The history of the College, since its establishment, may be said to be divided into four periods and the year 1875 marked the close of 'the first period The chief characteristic of this period was the pecuniary aid given by the Government to students in the way of stipends It was an era of p

in an untrodden country and Government had to bear the cost of the journey But it was also a period of great industrial development and of great activity in the construction of railways, canals roads and other aids to industrial enterprise The public mind was opening to the benefits of public works and to the advantages of Engineering as a profession The result was that in 1875 Government found it possible to restrict the financial help previously given to students and to limit the number of guaranteed appointments to the Public Service The years 1875 to 1896 may be termed the second period During these years though the pecuniary aid given to students was to a large extent done away with most of them paid practically nothing for their education The training however was confined chiefly to Civil Engineering Surveying and allied branches and technical or industrial classes did not exist The years 1896 to 1920 may be called the third period when all students except soldiers paid fees and the College was developed greatly as a Technical Institute much stress being laid on Industries and Science From the year 1920 to modern times may be considered as the fourth period when the College reverted once more to the specialized training of Civil Engineers and subordinates relinquishing Industrial and Mechanical and Electrical classes which were found to interfere with the more advanced training in Civil Engineering necessitated by modern conditions and were unsatisfactory in a non Industrial centre such as Roorkee

The Royal Indian Engineering College at Cooper s Hill in England which opened in 1871 and closed in 1906 had an unfortunate effect on the entry of students to the Engineer Class at Roorkee after 1876 While 55 admissions to this class were made in 1876 only twenty were made in 1878 but the effect of Cooper s Hill College decreased later when more Indians appeared as candidates for entry An entrance examination fee of Rs 20 was required for the first time in 1876

In 1878, Major A. M. Brandreth, R.E., succeeded Colonel A. M. Lang, R.E., as Principal. In 1881 the Guides Corps Class was thrown open to the whole Indian Army and was called the Native Military Survey Class. In this year also, for the first time, marks were allotted for physical fitness and for proficiency in athletics. From the commencement of 1883 the entire financial responsibility for the College was thrown on the Local Government. Under orders of the Secretary of State no Europeans, except Royal Engineers, were to be appointed as engineers in India, except under his sanction, it being understood that Cooper's Hill College was to be the source whence they were to be recruited. Indians of pure Asiatic descent were to be given all vacancies in the Public Works Department, irrespective of the position they held after the final examination, European competitors only receiving, under special sanction, appointments for which Indians were unable to qualify. This provision was altered in 1886 when guaranteed appointments were thrown open to all Statutory Natives of India. The Professorship of Experimental Science was abolished and considerable reductions made in the staff, due probably to an anticipated permanent reduction in the number of Engineer Class students.

Few events of importance seem to have occurred in the Thomason College between the years 1882 and 1894, except the abolition of the Military Section of the Lower Subordinate Class in 1885, the starting of a British Military Survey Class in 1888 and some changes in the Staff. Colonel A. M. Brandreth, R.E., retired in 1891 being succeeded as Principal by Colonel F. D. M. Brown, V.C. of the Indian Staff Crops; but the latter officer vacated in 1892 when Major J. Clibborn became Principal. The year 1894, however, is notable for the fact that in that year the last men for many years passed out of the Engineer Class into the Imperial Service. The Provincial Service was formed and the

Thomason College having been a provincial institution since 1882, all men from the Engineer Class entered the Provincial Service from 1894 This must have affected the entry to the College In 1895, educational qualifying tests were introduced for permission to sit for the entrance examinations

In 1896 commenced the third period in the history of the College The Lieutenant Governor of the North West Provinces visited the institution The College was reorganized and from this time forward all students except soldiers, paid fees for their education This further extension of the commercial principle far from injuriously affecting the College, added to its efficiency and activity The number of applicants for admission exceeded the number who could be accommodated and it became necessary to insist on a process of selection, whereby only those who stood highest in the competitive examination could be admitted From this time forth the College did not alone concern itself with the education of engineers and their subordinates its scope was extended so as to include Industrial and Technical education generally, *the aim being to develop the College into a Technical Institute for the Provinces* which should control, stimulate and inspire technical teaching of all kinds

The main points of this reorganization were

Firstly —The transfer of the administration of the College from the control of the Public Works Department to that of the Education Department—thus emphasizing the fact that the College was not only intended as a nursery for the Public Works Department, but also to supply the need for Technical education for the Provinces in general

Secondly —The extension of the course of students in the Engineer Class from two to three years, in addition to an apprentice year in the Public Works Department as Engineer students before they were appointed Assistant Engineers These, however, were not the only points of interest in the

reorganization scheme An era of great activity and expansion was inaugurated A Committee of Management was appointed and the College was affiliated to the Allahabad University The first revised entrance examination, applicable to both English and Indian students was held A class was formed for Mechanical Apprentices having a three year practical course in the Workshops combined with theoretical education An Industrial Class was started this had also a three year course divided into 15 sections including Press work Photography Photo Mechanical Processes and Art Handicrafts Students could take up one or more of these sections according to their capabilities The affiliation to the Allahabad University, though nominally effected was never actually completed and in time it died a natural death as did the affiliation to Calcutta University in 1864 It is evident that the development of the College into a Technical Institute was started with the greatest vigour under the control of the Education Department The Thomason College became an educational institute under that Department and all important matters had to be referred to the Committee of Management which became later the Advisory Council In 1896 a clock was presented by H E Sir Bir Shumsher Jung K C S I at a cost of Rs 2 500 and placed on the College dome

The next few years showed the progress of the College as a Technical Institute The Technical and Scientific side was greatly strengthened while the Civil Engineering side seems to have remained as before In 1897 two Professors two Instructors and a Demonstrator were appointed to the Staff viz a Professor of Mathematics (Mr Tipple) and of Experimental Science (Mr Sedgwick) an Instructor in Applied Science a Technical Instructor and a Laboratory Demonstrator A Chemical Laboratory was started New Technical Workshops were sanctioned In 1899 an Electrical Engineering Class was started In 1901 the new Technical Workshops

equipped with the latest machinery run by electricity, were built at a cost of Rs 33,000 The Applied Science Laboratories were fully equipped A Physical and Mechanical Laboratory was provided The College Press was enlarged and remodelled and an electrically operated water supply system for the whole College was installed Before the completion of all these alterations and additions which were necessary to carry out the details of the reorganization scheme of 1896, Colonel J Clibborn C I E I S C went on furlough pending retirement in 1901 and his duties as Principal were taken over by Captain E H deV Atkinson R E who remained Principal from 1902 to 1915 when he left the College (as Lieut Colonel Atkinson C I E R E to proceed on active service during the Great War A Council was created in 1901 to assist the Principal in regulating the courses of study and other matters which were recognized as outside the province of the Committee of Management A sub-committee of this Council now called the *Board of Studies*, still performs these duties though the Council itself has ceased to exist The enlargement of the Thomason College between the years 1896 and 1900 may be judged by the facts that the number of classes increased from 8 to 25, the number of students from 195 to 324 the fees from Rs 4 121 to Rs 16 784 and yet the yearly cost of the entire management fell from Rs 1,48,261 to Rs 1 32,064 These facts were pointed out by Sir A P MacDonnell Lieutenant Governor, in a speech delivered at Roorkee on November 6 1900 when he added that it was the object of Government to develop the Thomason College into a Technical Institute for the North West Provinces and Oudh which should control stimulate and inspire technical teaching of all kinds Experience, however showed later that advanced technical instruction was not easy at Roorkee and could not be given there except at the expense of higher civil engineering instruction The

Thomason College, with its 25 classes, was becoming very complicated, though such expansion may have been expedient under the industrial and technical conditions then obtaining

Captain Atkinson R E, in 1902, set about the reorganization of the interior economy of the College Fortnightly examinations—a trial both to the staff and students—were abolished The session was for the first time divided into three terms and the examinations grouped together at the end of each term A new time table was introduced and the allotment of marks re arranged The length of each attendance which had so far been invariably 3 hours was changed to 1½ hours, except for certain subjects such as Laboratory work and Drawing The arrangement of the staff was altered Each branch of study was placed under a Professor with assistants who were responsible for the teaching of that branch throughout the College A Dairy was started in connexion with the College stores which had been founded by the staff and students In July the College was visited by the Lieutenant Governor, Sir Digges LaTouche, and as a result of his inspection, a number of much needed buildings were sanctioned In the early part of 1903 most of these buildings were completed They included a building for the stores and dairy a bazar a central power house improvements to the quarters new latrines the completion of the system of drainage and a house for the Applied Science Instructor A grant of Rs 24 000 was sanctioned to be spread over four years for bringing the supply of surveying instruments in the College up to date In 1904 further improvements in interior economy were made The syllabuses for all the classes were revised and brought up to date The list of text-books in use was revised and recent and more approved methods of instruction in Geometry and Mechanics introduced A start was made to equip a Mechanical Laboratory for the practical teaching of Mechanics Instead of specified text books for

the Entrance examination of the Civil Engineer Class a brief Syllabus was prepared for each subject and published in the Circulars A Survey Class for Indian Officers of the Imperial Service Troops was held for the first time The Mechanical Apprentice Class which was started in 1896 was placed on a more practical basis an entrance examination introduced, and the course altered to three years at College and two years as Indentured Apprentices in outside workshops The rules for the Draftsman and Computor Class were altered and an examination in Drawing was held for men who had passed the Lower Subordinate Class Entrance examination but failed to obtain vacancies Mr P P Philips Ph D joined the staff as Instructor in Chemistry in 1904 The College Press was reorganized the Typographic branch being reduced and the Lithographic branch developed The terms of admission to the Industrial Apprentice Class were altered the payment of scholarships in special cases being substituted for stipends The College had indeed entered upon an era of strenuous reorganization and expansion

On April 8 1905 H E the Viceroy Lord Curzon inspected the Thomason College and on March 7, 1906 the College was greatly honoured by a brief visit from Her Royal Highness the Princess of Wales (now Her Majesty Queen Mary) who afterwards presented portraits of H R H the Prince of Wales and herself to the College The Lieutenant Governor—Sir J J D LaTouche—visited the College during 1905 A Professor of Surveying and Drawing and a Demonstrator in Chemistry were added to the staff in 1905 and Mr A M McLean joined the staff as an Instructor in Mechanical Engineering in 1906 In the year 1907 a large scheme for the further development of the College as a Technical Institute was sanctioned The Lieutenant Governor at that time—Sir John Hewett—was greatly interested in industrial and technical education An electric light fan and

telephone system was installed in the College main building the Workshops and the Principal s residence New engines of ample power were laid down A Technical Class was started and the Mechanical Apprentice Class enlarged To meet these increases additional hostel accommodation was built the workshops doubled in size new class rooms built additional staff entertained a new water supply inaugurated and last but not least new laboratories for the College sanctioned at a cost of Rs 94 000 In the following year (1908) the buildings sanctioned in the expansion scheme were practically finished and the new engines and water works installed An Automobile Driver Class was started and good progress was made at first in training drivers The Calcott Reilly Memorial Fund from the late Cooper s Hill College was handed over to the College to be given for Applied Mechanics in the Civil Engineer Class Mr C J Veale joined the College Staff in 1908 as Professor of Surveying and Drawing The new accommodation for the Photo-Mechanical Department (the College Press) was completed in 1909 and in this year the late expansion of the Professorial staff necessitated a scheme to provide new and better staff bungalows A site in the vicinity of Mahilpur village was acquired and the village removed to Khanjarpur Mr P P Phillips who was appointed on five years contract was taken into the Indian Educational Service In October 1909 His Honour the Lieutenant Governor Sir John Hewett visited the College and opened the new laboratories additions to workshops and the electrical and power installations and a new double storeyed hostel A sub committee of the College Council was formed into a *Board of Studies* to advise on all matters connected with courses examinations and time tables In 1910 the Technical Class was abolished and arrangements made to form a Department of Technology Major H B D Campbell R E (Assistant Military Principal) left the College in which he

had served since 1897 and was replaced by Captain E W C Sandes, R E, who joined as Professor of Civil Engineering on the abolition of the post of Assistant Military Principal Mr H P Jordan also joined as Professor of Mechanical Engineering An elaborate educational plant of cotton machinery was installed in the College workshops with an expert instructor in charge of the Cotton Class Five houses were built in 1910 and 1911 for College professors on the Malikpur estate though not taken into use till late in 1912 A Department of Technology was formed on revised lines to consist of (1) a Higher Division (2) a Lower Division (Mechanical Apprentice Class) (3) an Automobile Driver Class Marks throughout the College were re arranged and few papers were valued at less than 100 marks Special grants were assigned for Survey equipment and Workshops equipment

A large Textile Department building was built in the Workshops enclosure in 1911 and 1912 all the cotton machinery was erected in it This is the building—now outside the Workshops enclosure—which was converted later for use by the Overseer Class and staff as class rooms and offices and known as the Overseer Class Annexe The Automobile Driver Class was transferred to Lucknow This transfer marked the beginning of the gradual diminution of all Technical and Industrial classes in the Thomason College and its reversion from a Technical Institute into a purely civil engineering institution as it is today In 1913 nine Anglo Indian students joined the Textile (Cotton Spinning and Weaving) Class but the Class did not seem to be a success After a few years admissions it ceased at Roorkee and later the cotton machinery was transferred elsewhere In 1914 admissions to the higher division of the Department of Technology at Roorkee ceased and the lower division (the Mechanical Apprentice Class) was transferred to Lucknow, so that both

these classes soon ceased to exist in the College These changes marked a further step in the reversion of the College to a civil engineering institution though in 1914 a Mechanical and Electrical Engineer Class was started and was maintained for a time In 1913 the Public Services Commission under Lord Islington visited the College There were no other events of much importance in the College in the years 1913 and 1914 The institution developed gradually in different ways but in a calm and peaceful atmosphere rudely broken in August 1914 by the world wide catastrophe of the declaration of War

When the Great War commenced the College was in vacation but in October 1914 when it re-opened great enthusiasm and patriotism were shown by the staff and students who subscribed Rs 2 500 towards the Imperial Relief Fund and followed daily the progress of the war on maps hung in the College corridor Mr B M Mukerjee Professor of Physics volunteered in 1914 for service in the X Ray section of the General Hospital and left for active service in the Western theatre not returning until 1920 Captain E W C Sandes R E proceeded on active service to Mesopotamia in March 1915 The Principal Lieut Col E H deV Atkinson C I E R E proceeded to England in July 1915, where he was appointed C R E of a Division and rose to be Chief Engineer of the 4th Army on the Western Front before the end of the war with the rank of Major General and many decorations Mr J E Tipple officiated as Principal till October 1916 in his absence Mr H P Jordan Professor of Mechanical Engineering and Mr A M McLean Instructor in the same Department obtained commissions in the Indian Army Reserve of Officers and left for military service in May 1915 and August 1915 respectively Mr Jordan returning invalided in October 1915 and Mr (now Major) McLean M C in 1920 after service in Mesopotamia and st

employment in India Mr E S Griffith an Instructor obtained an I A R O commission in May, 1917 and M G Lacey who joined the College as Professor of Civil Engineering in November 1915 also obtained a commission in 1917 and both left the College Many European students who had passed out of the College received commissions and the names of those students killed in the War appear on a brass memorial tablet in the College It is evident that the War took a heavy toll of the College Staff and instruction became increasingly difficult Funds were also scarce so that any large expansions had to be postponed till better times Nevertheless the instructional work continued The Public Works Department assisted the College by recommending the appointment as Principal of Mr W Gunnell Wood C S I late Chief Engineer Buildings and Roads Branch, United Provinces and this appointment was made in October 1916 Sir James Meston Lieut Governor visited the College in February 1916

The Public Works Reorganization Committee visited the Thomason College in 1917 and in July of that year His Honour the Lieut Governor of the United Provinces Sir James Meston presided at the Annual Convocation The Indian Defence Force came into existence replacing the Mussoorie Volunteer Rifles and all British subjects in the College were enrolled in the new formation Admissions to the Textile Class ceased in 1918 but the class was not transferred finally to Cawnpore till January 1920 The declaration of the Armistice was duly celebrated in November 1918 and the College settled down to consolidate its position in the difficult times which succeeded the War when political unrest in certain districts and lack of funds for new schemes rendered the task of Government no easy one Mr E F Tipple Professor of Mathematics vacated his post in April 1919 after

22 years service at the College during which he twice officiated as Principal In February 1920 Major E W C Sandes D S O , M C , R E , re-joined the College Staff from leave after the War as a Professor of Civil Engineering and subsequently officiated as Principal for several months during the absence on leave of Mr W G Wood, C S I During 1920 and 1921, the College suffered heavily through the deaths of Mr F W Sedgwick Professor of Electrical Engineering and Physics who had served on the College Staff for 23 years and Sub Conductor G E Lansley Personal Assistant to the Principal, on March 22 1920 and October 6 1921 respectively Mr W L Stampe I S E was appointed as a second Professor of Civil Engineering in November, 1920 and Mr J M Salusbury Trelawny as a third Professor in October 1921 There were many changes in the superior staff at this time due to the altered conditions after the close of the War and the retirement of officers who had carried on the work ably during the War

It is not proposed, in this history, to deal with changes of staff other than professorial staff, except in unique cases and as regards professors merely to mention the times of their first appointment and dates on which they vacated their posts finally Officiating appointments and those owing to leave vacancies are too numerous and would make the history unwieldy Reference to the Annual Report at the end of the Calendar of any year will show in detail the changes in the staff during that year For easy reference a list of Principals follows this History in the Calendar and also a list of Convocation Presidents i e officers who presided at the Annual Convocations and Prize givings A further list of very distinguished visitors is added Many other senior officials have also visited and continue to visit the College the Annual Report of each year shows their names and needless to say the College welcome such indications of their interest in t

A complete Reorganization Scheme for the Staff of the Thomason College, dated July 12, 1919, was drawn up in that year by the Committee of Management of the College to suit the new requirements of Government under the Reforms Scheme and the new policy laid down for the future of the College and it was duly submitted to the Secretary of State The scheme was necessitated by the proposal to close down certain classes in the College as mentioned hereafter The Committee of Management proposed certain modifications of the original scheme in May 1920 and final sanction to the amended scheme was accorded by the Secretary of State on January 29, 1922 After 1920, admissions to the Upper Subordinate Lower Subordinate, Industrial Apprentice and Mechanical and Electrical Engineer Classes ceased It had been decided finally that the training of Mechanical and Electrical specialist students and Industrial and Technical students was not suited to Roorkee and this decision marked the end of the scheme to develop the Thomason College as a Technical Institute The cessation of recruitment to the Upper and Lower Subordinate Classes and the consequent disappearance of the last students of these classes in July, 1922, was brought about by changes in the organization of the Public Works Department under which many sub divisions were to be in the charge of Assistant Engineers (Provincial Service) instead of Upper Subordinates This scheme made it advisable to train sub overseers to a standard higher than the Lower Subordinate Class recruits for the new Subordinate Engineering Service Hence, when the Upper Subordinate and Lower Subordinate Classes were to be abolished in the College, a scheme was prepared to replace them by a new Overseer Class of intermediate standard The new Overseer Class was approved and the first students were admitted in October 1922 for a 3 years' course, 40 vacancies being offered annually for com

petition This 3 years' course was later reduced to 2 years. The former Lower Subordinate Class Staff was transferred to the Overseer Class, but later the instruction was supervised and assisted also by the Lecturers of the Civil Engineer Class. It was originally intended that the Overseer Class should be located at Roorkee only until buildings were ready at Lucknow to accommodate it. The last students of the Mechanical and Electrical Engineer Class and the Industrial Apprentice Class passed out of the College in July, 1923, but a class for Draftsmen was retained and still exists A batch of 20 Military students was admitted to the College in January, 1922, as a special case, to meet the requirements of the Military Engineer Services (old M W S) for a short course of training approximating to that of the abolished Upper Subordinate Class with due regard to the shorter duration This batch left the College in July, 1923 A second batch of ten Military students only was admitted in October, 1922 and passed out in July, 1924 and with that batch the class ceased to exist in the Thomason College and all College students up to July, 1935 have been civilians. Since October, 1935, 3 Indian Military Academy Gentlemen Cadets are to be admitted to the Civil Engineer class annually after they have passed the entrance examination to undergo a course of post graduate training corresponding to that of Cambridge with a view to their obtaining Commissions in the Indian Engineers

In the year 1931, the College Committee of Management was replaced by an *Advisory Council* constituted under G O No 1573/XV—312, dated July 10, 1920 The last meeting of the Committee of Management (45th) was held on July 9, 1920 and the first meeting of the Advisory Council on February 17, 1921 The Council was formed with 10 members as compared with 7 members constituting the Committee, but the number of members in the Council has since increased the status of the Thomason College was

improved owing to the Government of India offering to the Civil Engineer Class 10 or 9 vacancies in alternate years, in the Indian Service of Engineers, as *guaranteed appointments* This step, by which employment in the Imperial Service was again thrown open to highly qualified students, was a return to the practice in vogue up to 1894, when students could pass into that Service The constitution of the Indian Defence Force was changed in 1921 to the Auxiliary Force (India) and the College detachment (Europeans) became a part of the Mussoorie Battalion being organized as a Machine Gun Section As increased accommodation for professors was required, one thatched bungalow almost opposite the Royal Engineers Mess was replaced by a pukka building in 1920 and in 1921 the construction of a pukka bungalow was commenced opposite the Royal Engineers Mess and another further east In October 1921 Mr W G Wood, C S I, vacated the post of Principal and was succeeded by Major E W C Sandes D S O M C R E

His Excellency the Governor of the United Provinces Sir Harcourt Butler, K C S I, C I E, presided at the College Convocation and Prize giving in July, 1922 In this year a Committee was appointed by Government to inspect the College Press with a view to possible economies through the transfer of the control of the Press to the Superintendent of the Government Press, Allahabad (then Mr Abel) Though the Committee recommended the transfer, the Advisory Council was averse to it and Government accepted the opinion of the Council The two new bungalows for professors were completed in 1922 and funds were given for the transfer of the Textile (Cotton) Machinery to Cawnpore and the conversion of the Textile Building into an Annexe for the Overseer Class instruction The benefits of the sanctioned Reorganization Scheme were felt in this year All members of the instructional staff were allowed rent free quarters from October

1922 and salaries were improved Mr H P Jordan Professor of Mechanical Engineering then on leave, was transferred to the Poona Engineering College in October 1922 Mr Dhawan Mr Raja Ram Mr B D Puri and Mr Shiv Narayan joined the Staff as Professors of Civil Engineering (Railways) Civil Engineering (Sanitary) Mathematics and Electrical Engineering and Physics respectively also Mr Chuckerbutty as Assistant Professor of Surveying and Drawing But Mr Shiv Narayan and Mr Chuckerbutty were transferred elsewhere after one session and the posts remained vacant and Mr Dhawan also left in October 1923

His Excellency Sir William Marris K C S I K C I E who succeeded Sir Harcourt Butler as Governor presided at the Convocation in July 1923 This occasion was unique in that the Governor of the Punjab His Excellency Sir Edward Maclagan K C S I C I E was also present and distributed the prizes at the request of Sir William Marris Sir Edward Maclagan had been invited in view of his connexion with the College through his father Colonel R Maclagan R E who was the first Principal A portrait of Colonel Maclagan presented by His Excellency Sir Edward Maclagan in commemoration of his visit hangs in the Convocation Hall Mr C J Veale Professor of Surveying and Drawing officiated as Principal for a period of six months in 1923 (including the College vacation) in the absence of Major Sandes In November 1923 sanction was given to the formation of a Platoon of the 3rd (Allahabad) Battalion of the University Training Corps (Indian Territorial Force) at Roorkee thus enabling the Indian students to undergo military training for the first time Applications for enrolment far exceeded the vacancies and there was great keenness Unfortunately the strength of one Platoon did not allow of the actual enrolment of more than one half of the Civil Engineer Class students but the remainder received military drill instruction The

Overseer Class students continued to receive instruction in physical drill

Major General Sir Edwin Atkinson K B E C B C M G C I E Master General of Supply and a former Principal of the College presided at the Convocation in July 1924 During this year the grant for repairs was increased and much necessary and overdue work was carried out including re roofing the College bazar buildings and the completion of new out buildings and the re roofing of servants quarters Dr P F Phillips on return from leave officiated as Principal from October 1923 till the return from leave of Major E W C Sandes in October 1924 A Special Committee was assembled by Government at Roorkee in December 1924 to investigate certain matters connected with the syllabi courses of study and staff of the College arising out of the introduction of the Reorganization Scheme of 1919 A very comprehensive report was submitted by this committee in 1925 which was subsequently dealt with item by item by the Advisory Council whose recommendations caused Government to sanction several useful alterations and innovations in the College courses Mr A C Verrieres C I E Chief Engineer Buildings and Roads Branch Public Works Department United Provinces an old student of the College presided at the Convocation in July 1925 this being the first instance of a past student performing this duty An extension of the Indian Engineer Class Club was put in hand and also several internal alterations in the College itself and in hostels and re roofing of certain bungalows with jack-arches A very fine steel model of a plate girder bridge span on a large scale was presented to the College by Messrs Burn & Co Howrah and installed in one of the College model rooms which have been developed into useful instructional departments Mr R A Bradshaw Smith I S E joined the Staff as Professor of Civil Engineering (Irrigation) in February,

1925, Mr L E Dawson having acted temporarily since Mr W L Stampe vacated the post in October, 1924

The President at the College Convocation in July, 1926 was His Excellency Sir Malcolm Hailey, K C S I, C I E, Governor of the Punjab He was invited to preside because *the Punjab had, of late years been so largely represented in the College Indeed the Punjab candidates for the Civil Engineer Class* had become as numerous as those from the United Provinces the Punjab paying the expenses of the training of every such candidate who gained admission though admissions were limited The Board of Studies in 1926 formulated proposals for the improvement of the Overseer Class course and instruction A grant was given by Government for the purchase of additional plant for the College Workshops which lacked modern generating machinery Two vestibules one class room and three offices were re roofed in the main College building and also certain servants quarters and small out houses Another lecturer s bungalow was re roofed with jack arches

The Convocation President in July 1927 was Mr (now Sir) B D O Darley C I E I S E Chief Engineer Sarda Canal, and Secretary to Government United Provinces Public Works Department Irrigation Branch Mr Salig Ram I S E an old student joined the Staff in June 1927 as Professor of Civil Engineering The College was grieved to learn of the death of a distinguished past student Sir Ganga Ram During the summer a new flagstaff was erected in front of the College

This brief history having now been written up to the end of the College Session of 1926 27—a period of 80 years since the foundation of the Thomason College in 1847—it may be well to continue it year by year in the form of *a Sessional Diary* including the *preceding* vacation i e by yearly periods from July 15 to July 15 and this system will len

be adopted It should be realized that all facts and events cannot be recorded in the History, but only those of importance

Session 1927-28 —A great event in the Session 1927-28 was the visit of His Excellency the Viceroy, Baron Irwin of Kirby Underdale G M S I, G M I E, to the Thomason College on April 11, 1928 His Excellency and Staff detrained in the early morning, motored round the College estate and then visited the Workshops and inspected the College and later inspected also the College Press before departing by motor for Dehra Dun His Excellency inspected a Guard of Honour of the College students and was photographed with the staff, students and visitors He expressed himself much gratified with all he saw and presented a photograph to the Principal, an enlargement of which appears in the College Convocation hall The honour of this visit was greatly appreciated by the College as a whole and particularly since no Viceroy had visited the institution since Lord Curzon came in 1905 His Execellency the Viceroy was pleased to enter the following remarks in the College Visitors' Book

> "It gave me great pleasure to visit the Thomason College to day and to see with my own eyes the institution which has turned out so many famous engineers The equipment was obviously of a high standard and the curriculum appeared to me very comprehensive and wisely drawn for its purpose I was greatly impressed by all I saw and by the many evidences of the way in which Colonel Sandes and his Staff are carrying on the work I am very grateful to him for giving me so interesting and instructive a morning and to him as to the College Staff and its students I can wish nothing better than that the College may maintain the high standard and tradition which is associated with its name
>
> IRWIN"

The Principal, Lt-Col E. W C Sandes, D S O, M C R E., was placed on deputation for one month in November 1927, with the Rangoon University to advise about the Engineering College at Rangoon and he proceeded to Burma for this purpose The Civil Engineer Class students passing out

of the Thomason College in July, 1928, were the first batch for many years to whom the Government of India guaranteed no appointments in the Indian Service of Engineers, such guarantee having been withdrawn in the case of students entering in October 1925 and thereafter The entrance examination to the Civil Engineer Class in June, 1928, was also the first examination conducted under a revised syllabus of a higher standard than formerly with the approval of Government and the Advisory Council and stipulating also a higher qualifying standard than before for permission to sit for that examination *viz* the Intermediate or equivalent standard in place of the Matriculation or equivalent It was anticipated that this raising of standards would cause a marked decrease in the number of candidates but such is the reputation of the Thomason College and the prospects offered to students that this was not the case Indeed 203 candidates who were qualified under the new rules entered for the examination in June 1928 in competition for the usual 30 ordinary annual vacancies in the Civil Engineer Class In the Overseer Class 236 candidates entered for 40 vacancies During the summer of 1928 most of the College staff benefited by the recent completion by the Public Works Department of temporary lines on the College estate for the supply of electric current from Bahadarabad Consumers made their own arrangements for temporary internal wiring and fittings pending permanent arrangements but were able to draw current on payment, from the Public Works Department through the sub station erected in 1927 on the College estate The Students Mess and Club similarly benefited The first P W D Power Installation at Bahadarabad was completed in 1913 and was arranged to supply alternating current to the Canal Headworks at Bhimgoda only the alternators being driven by turbines operated by canal water In 1924—26 however the power station was greatly enlarged alternative plant was installed

and the electric supply given to Hardwar and adjacent places. A line was laid also to supply the whole of Roorkee, including the College, part of whose electric current now comes indirectly from its parent the River Ganges The new water-supply system for the College estate, however, could not be installed as funds were not available A very large steel model road bridge of Baltimore Truss type with overhead bracing, was received during 1927 from Messrs Burn and Co , Howrah and placed in the bridge model room during the Session 1927 28, complete with framed diagrams and calculations Most of the cost was generously met by the firm The liquidation of the College Stores was completed The staff and students of the College learnt with the deepest regret on June 17, 1928 that His Excellency the Governor of the United Provinces Sir Alexander Muddiman Kt K C S I C I E had died on that day His Excellency had undertaken to preside at the Annual Convocation in July 1928 In consequence of this tragic event Mr A H Mackenzie C I E Director of Public Instruction United Provinces presided at the Convocation and distributed the prizes and certificates This function brought to a close a notable Session—the first since 1905 in which the College had been honoured by a visit from a Viceroy A silver challenge cup, to be awarded annually to the best student in Games and Sports, was donated to the College by the Principal Lieut - Colonel E W C Sandes and was presented to the first winner at the Convocation, together with a miniature cup Another silver challenge cup was donated by Mr B D Puri, Professor of Mathematics, for Squash Racquets Doubles, and a third cup by Mr J Barnett Personal Assistant to the Principal, for the Overseer Class in the Athletic Sports These cups were also presented at the Convocation A fourth silver cup, for an annual cross country race, was promised by Mr R A Bradshaw-Smith Professor of Civil Engineering, on

leaving the College, when reverting to his Department in 1928

Session 1928 29 —The Hon ble Raja Bahadur Kushalpal Singh the United Provinces Minister for Education presided at the Annual Convocation n July 1929 Dr P P Phillips officiated as Principal from May 1929 until the end of the session in place of Colonel Sandes who was granted leave During the year funds were provided by Government for the installation of electric light in all the College residential quar ters a benefit which was appreciated by all concerned The separate department of Electrical Engineering and Physics was abolished and the instruction in Electrical Engineering trans ferred to the Mechanical and Electrical section at the Worl shops Physics was combined with the work of the Chemistry Department which henceforth will be known as the Department of Applied Science Lieut J S Carney took charge of the post of Head Master Overseer Class from the beginning of the session

Session 1929 30 —Mr P H Tillard I S E Chief Engi neer P W D B & R Branch U P presided at the Annual Convocation in July 1930 Colonel Sandes proceeded on leave preparatory to retirement with effect from March 7 1930 and Mr P P Phillips was appointed to succeed him as officiating Principal in the first instance

Session 1930 31 —Mr A H Mackenzie C I E Direc tor of Public Instruction United Provinces visited Roorkee from April 8 to 10 and inspected the College Mr W Roche C I E I S E Chief Engineer P W D Irrigation Branch U P presided at the Annual Convocation The European students' mess of the Civil Engineer Class had to be closed owing to paucity of members after having been in existence for 31 years Up to the last its members had a very fine record both in work and games

Session 1931-32 —The Retrenchment Committee appointed by Government for the Thomason College presided over by the Hon'ble Mr J P Srivastava M Sc , A M S T M L C , Minister for Education, United Provinces, met in Roorkee from November 12 to 14, 1931 His Highness the Maharaja of Jaipur visited the College in January, 1932 and Major General Addison on July 6 1932

The Photo Mechanical and Litho Department and Book Dépôt ceased to be departments of the College with effect from March 1 1932 The course of instruction in photography was abolished and the last award of medals in photography was made at the convocation on July 14, 1932

Dr P P Phillips Ph D , F I C I E S , Principal was superannuated with effect from March 22, 1932, after serving the Thomason College for 28 years and Mr Raja Ram, Professor of Civil Engineering succeeded him as officiating Principal from that date

Mr Gerald Lacey, I S E , Professor of Civil Engineering proceeded on leave with effect from April 21, 1932 and reverted to the Irrigation Branch United Provinces from October 17 1932 and Mr M L Garga Assistant Research Officer, Irrigation Branch officiated as Professor of Civil Engineering up to July 15, 1932 in his place

Professor Gerald Lacey offered an annual prize of Rs 25 to be awarded to a Civil Engineer Class student for the best performances at the meetings of the Thomasonian Society during each session

Mr C J Veale, F R G S , F R A S , Professor of Surveying and Drawing retired on pension with effect from March 8 1932

Dr M A Hamid, Ph D , M Sc , joined as Temporary Professor of Applied Science on October 22, 1931

Lieut Col C A Bird, D S O , R E , presided at the annual convocation

Session 1932 33 —Many of the changes ordered by the Government in accordance with the report of the Retrenchment Committee which met in Roorkee from November 12 to 14, 1931, became operative with the start of this session

The departments in the Civil Engineering Course were reduced from 5 to 3 The Department of Applied Science was abolished Physics being added to the Department of Pure and Applied Mathematics and Chemistry Geology and Mineralogy to the Department of Civil Engineering The Department of Survey and Drawing was amalgamated with the Department of Civil Engineering and its professorship reduced to an assistant professorship

The changes in the staff were

(i) Abolition of the post of Professor of Applied Science
(ii) Abolition of one of the posts of Professor of Civil Engineering thereby reducing the number from 3 to 2
(iii) Abolition of two posts of Instructors of the Overseer Class reducing the number from 5 to 2
(iv) Abolition of one of the two posts of Lecturers in Mechanical Engineering
(v) Abolition of the post of Superintendent of the College Office and combining this post to that of the Personal Assistant to the Principal

Further from the start of this session the Principal in addition to his ordinary duties became head of the Department of Civil Engineering and was called upon to lecture

Mr H J Amoore I S E became Principal from *October 6 1932*

Mr H F Cumming was appointed Assistant Professor of Survey and Drawing from the start of the session and Mr J Crawford ceased to be a lecturer in Mechanical

Engineering, becoming Headmaster of the Overseer Class from the same date relieving Mr H T Cumming

Rai Bahadur Debi Datta Mal, I S E, was appointed Professor of Civil Engineering, joining his appointment in February, 1933 thereby relieving Mr M L Garga who reverted to his substantive appointment in the Irrigation Branch of the P W D United Provinces

Raja Jwala Prasad retired Chief Engineer Irrigation Branch P W D U P presided at the Annual Convocation

Session 1933 34 —Major A M McLean Assistant Professor of Mechanical and Electrical Engineering who joined the staff of this College in October, 1906 left in March, 1934 on leave preparatory to retirement Mr J Crawford, Head Master Overseer Class officiated in his place in addition to his own duties

The Hon ble Sir J P Srivastava Kt M Sc M L C Minister for Education United Provinces presided at the Annual Convocation

Session 1934 35 —Mr H J Amoore Principal proceeded on leave out of India from March 15, 1935 Professor Mahabir Prasad who joined the College as Professor of Civil Engineering on the forenoon of December 7, 1934, officiated as Principal from March 15, 1935

Mr J Crawford continues to officiate as Assistant Professor Mechanical and Electrical Engineering

Mr P C Sen Gupta took over charge as officiating Headmaster, Overseer Class on February 11 1935

Captain J Barnett proceeded on privilege leave from May 13 1935, for 2 months 25 days

Mr P L Sharma, Lecturer in Drawing, proceeded on leave out of India for 6 months 21 days in continuation of College vacation of 1934, from October 22, 1934, but had to return earlier and resumed charge on December 8 1934

Mr P S Bhatnagar officiated as lecturer in Drawing in his place from October 22 1934 to December 8, 1935

A special committee appointed by the Government to report on the revision of syllabus and course of study Civil Engineer class held its sitting at the College on January 6 and 7, 1935

Sir Sita Ram, President of the Legislative Council, paid a visit to the College on April 26, 1935

Session 1935 36 —Mr W M G Dawson, I S E, joined the Staff as Professor of Civil Engineering in the vacancy caused by Rai Bahadur Debi Datta Mal, I S E, reverting upon completion of his term of office to the Irrigation Department, United Provinces

Mr W M G Dawson I S E proceeded on leave combined with the College vacation in March 1936, and Mr K N Kathpalia, I S E was appointed in his absence to deliver lectures in Hydraulics and Irrigation

In accordance with arrangements made by the Army Headquarters, India, with the Government of the United Provinces, Indian Commissioned Officers from the Indian Military Academy joined the Civil Engineering class of the College Three officers joined 2nd Lieutenants A N Kashyap, N S Bhagat and Anant Singh

Session 1936 37 —Messrs Mahabir Prasad I S E, and W M G Dawson I S E Professors of Civil Engineering reverted to their substantive appointments in the Public Work Department of the United Provinces on March 15, 1937 and July 7, 1937, respectively

Major H Williams R E joined the Staff on October 8 1936, being the officer deputed by Army Headquarters Simla to be in charge of the Indian Commissioned Officers under going a post-graduate course in Civil Engineering and Professor of Civil Engineering

Mr. Raja Ram on completion of his period of 3 years as Malarial Engineer with the Government of India resumed his post as Professor of Civil Engineering on July 10, 1937.

Mr. H T Cumming, Assistant Professor of Survey and Drawing, proceeded on leave combined with the 1937 College vacation on April 9, 1937

Mr J Crawford, officiating Assistant Professor of Mechanical and Electrical Engineering, was confirmed in that post from March 28, 1935

Major Barnett, Personal Assistant to Principal and Superintendent of the College Office, was away on leave from November 4—24, 1936.

Mr. M L. Misra, Lecturer in Electrical Engineering, was on leave on medical certificate from October 27, 1936 to February 20, 1937

Lala Phumman Ram, Instructor, Overseer Class, retired from service from January 4, 1937.

Session 1937-38 —Mr Raja Ram, Professor of Sanitary Engineering proceeded on long leave on October 16, 1937 and rejoined on April 18, 1938

Mr. Romesh Chandra, I S E, joined the staff as Professor of Civil Engineering on October 18, 1937 and reverted to his substantive appointment upon completion of the session

Mr. P. Chakravarti, Lecturer in Pure and Applied Mathematics, was on leave from April 13, 1938 to May 11 1938.

The Hon'ble Pandit Govind Ballabh Pant, B A, LL.B., Premier, United Provinces, visited the College on December 2, 1937, and addressed the students

The Hon'ble Mr. Pearey Lal Sharma, Minister for Education, United Provinces, visited the College on December 21, 1937, and gave away the prizes at the Annual Sports.

Mr R S Weir, Director of Public Instruction United Provinces visited the College in June 1938

At the close of the session passed out the first three Indian Commissioned Officers, who joined the College in October, 1935 for a 3 years post graduate course in Civil Engineering

Sir William Stampe Kt C I E , very kindly presented a challenge cup for Inter class athletic events This was first awarded and won by the Civil Engineering class, 3rd year

Mr Puran Mal retired Assistant Engineer Public Health Department donated a sufficient sum to provide annually 2 silver medals one for the Civil Engineer class and the other for the Overseer class The medals to be known as the Puran Mal silver medals for Public Health Engineering The medals to be awarded annually to those students who obtain the highest marks in the final examination on Sanitary Engineering and Water Supply The medals were first awarded at the Convocation in July 1938

Session 1938 39—Mr H J Amoore Principal proceeded on leave preparatory to retirement from May 5 1939 and Major C D Reed R E carried on his duties in addition to his own till July 15 1939 and made over charge to Mr P D Puri Professor of Mathematics on July 16 1939

Major H Williams R E Professor of Civil Engineering and officer in-charge of Indian Commissioned Officers reverted to Defence Department from November 7 1938 and was succeeded by Major C D Reed R E who also reverted to Defence Department from July 16 1939

Mr Raja Ram Professor of Civil Engineering resigned from May 8 1939

Mr B D Puri Professor of Mathematics was on leave on medical certificate from January 18, 1939 to April 5, 1939 and Mr P Chakravarti, Lecturer in Mathematics officiated as Professor of Mathematics during the period

Mr H T Cumming, Assistant Professor of Survey and Drawing was on leave on medical certificate from December 22, 1938 to February 13 1939 when he was invalided by the Medical Board His duties were carried on by Mr S R Singh Lecturer in Surveying

Major J Barnett Personal Assistant to the Principal, retired on March 7, 1939

Mr P Chakravarti Lecturer in Mathematics proceeded on leave preparatory to retirement from April 6 1939

Mr P L Sharma Lecturer in Drawing was on leave from January 27 1939 to February 28, 1939 and his duties were performed by Mr H J Amoore Principal and Major J Barnett, Personal Assistant to the Principal

Mr M L Misra, Lecturer in Electrical Engineering was on leave from October 28, 1938 to December 14, 1938 when he was invalided by the Medical Board

His duties were performed by Lieutenant-Colonel J. Crawford, Assistant Professor of Mechanical and Electrical Engineering and Mr B L Sharma, Lecturer in Mechanical Engineering

The Hon'ble Sri Sampurnanand, B SC, Minister for Education, United Provinces visited the College on April 11, 1939

His Excellency Sir Harry Haig, K C S I, C I E, I C S Governor of the United Provinces accompanied by Lady Haig visited the College on July 15, 1939 and presided at the Annual Convocation

The Defence Department withdraw its Indian Commissioned Officers, who were undergoing post graduate course in this College and along with them their officer in charge from the end of this session

A Committee appointed by Government to reorganize this College visited the College on July 7 8 and 9 1939

Session 1939 40—Major C D Reed R E, Officiating Principal, Professor of Civil Engineering and Instructor Indian Commissioned Officers, was withdrawn by the Military Department and made over charge of the post of Principal to Mr B D Puri, Professor of Mathematics and that of the Professor of Civil Engineering to Mr S R Singh Lecturer in Surveying on July 16 1939

Rai Bahadur Mool Chand Bijawat I S E Superintending Engineer Public Works Department Irrigation Branch joined as Professor of Civil Engineering on October 29 and took over charge of the post of Principal from Mr B D Puri, Professor of Mathematics and that of Professor of Civil Engineering from Mr S R Singh Lecturer in Surveying on the same date

Rai Bahadur Madan Gopal Sardana retired Superintending Engineer of the Public Works Department Irrigation Branch took over charge as Principal from Rai Bahadur Mool Chand Bijawat on January 17 1940

The post of Assistant Professor of Survey and Drawing was converted into that of Assistant Professor of Civil Engineering Mr V G Garde was appointed to it and took over charge from Mr S R Singh Lecturer in Surveying on October 10 1939

Mr Jai Krishna was appointed temporary Lecturer Civil Engineering from December 1 1939 to January 1940

Mr B D Puri Professor of Mathematics was on leave on medical certificate from January 18 1939 to April 5 1939 and Mr P Chakravarti Lecturer in Mathematics officiated as Professor of Mathematics during the period

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Mr Jai Krishna was appointed temporary Lecturer in Civil Engineering from December 1 1939 to January 16, 1940

Mr Jai Krishna was appointed Personal Assistant to Principal from January 17, 1940 relieving Mr S R Singh from Personal Assistant to Principal s duties from the same date

Mr Chandra Prakash Mital was appointed temporary Lecturer in Civil Engineering from June 3, 1940 to July 15 1940

Dr Zaki Uddin Ahmad joined as Lecturer in Electrical Engineering on October 16 1939 relieving Lt Col J Crawford Assistant Professor of Mechanical and Electrical Engineering and Mr B L Sharma Lecturer in Mechanical Engineering on the same date

His Excellency Sir Maurice Garnier Hallett K C S I C I E , I C S , Governor of the United Provinces visited the College on April 18 1940

Dr Sir Shah Muhammad Suleman Vice Chancellor of the Muslim University Aligarh Judge of the Federal Court visited the College on April 20 1940

Dr Panna Lall M A , B SC LL B (Cantab) D LITT (Agra) Bar at Law C I E I C S Adviser to His Excellency the Governor United Provinces, visited the College on July 12 1940

Session 1940 41—Lieut Col C D Reed of the Engineer in Chief s branch visited the College in connexion with the training of B N C Os as Military S D Os

Mr Chatterjee Regional Inspector visited the College in connexion with the training of War technicians in the College Workshops

The last batch of students nominated by the Punjab Government for studying in the Civil Engineer class of this College completed their course this Session

Services of Lieut Col J Crawford, Assistant Professor of Mechnical and Electrical Engineering were placed at the disposal of the Army Department with effect from May 15 1941, and Mr B L Sharma Lecturer in Mechanical Engineering is officiating in his place from the same date

Revised new Syllabus for the Civil Engineer class was introduced from this session

Session 1941 42—The training of British Non Commissioned Officers and War technicians started from July 1941 In connexion with the training of War technicians this College has been made a Civmil centre with a strength of 650 War technicians

Colonel Gordon visited the College to see what facilities this College could give for the training of Surveyors and other P W Staff

The post of a permanent lecturer in Civil Engineering was created and Mr Jai Krishna Personal Assistant to Principal was appointed to it

Mr Jagdamba Prasad was appointed officiating lecturer in Mechanical Engineering with effect from January 9 1942

Mr Kashi Saran Misra was appointed officiating Personal Assistant to Principal with effect from January 10 1942

Two topmost students of the Civil Engineer class were guaranteed appointments in the Provincial Service of Engineers with effect from the year 1942 43 These guaranteed posts were also given to the students who passed out in July, 1941

Session 1942 43—The training of war technicians with the exception of Surveyors ceased in this College from April 15, 1943 In the first week of May 1943 training of the First Technical Unit of the Civil Pioneer Force started in the College Mr B L Sharma officiating Assistant Professor of Mechanical and Electrical Engineering proceeded on leave from May 16 1943 Mr P C Sen Gupta Head Master Overseer Class proceeded on leave from]
March 4 1943

LIST OF PRINCIPALS

Colonel R Maclagan R E	1847—1852
Major Oldfield R E (Offg)	1852—1856
Colonel R Maclagan R E	1856—1860
Captain C E S Williams R E	1860—1862
Colonel J G Medley, R E	1863—1871
Colonel A M Lang R E	1871—1877
Colonel A M Brandreth R E	1877—1891
Colonel I D M Brown V C I S C	1891—1892
Lt Col J Clibborn, C I E, I S C	1892—1902
Lt Col E H deV Atkinson C I E, R E	1902—1915
W G Wood, Esq, C S I	1916—1921
Lt Col E W C Sandes D S O M C, R E	1921—1931
Dr P P Phillips PH D, F I C I E S	1931—1932
H J Amoore Esq I S E	1932—1939
Rai Bahadur Madan Gopal Sardana	1940—

NOTE —The ranks shown are those held on vacating the appointment Officiating Principals are omitted from the list, but many names appear in the Calendar of 1911 and the names of Mr E F Tipple Mr C J Veale Mr Raja Ram Major C D Reed R E Mr B D Puri and R B M C Bijawat may be added for recent years

LIST OF CONVOCATION PRESIDENTS

From 1890

1890 The Hon ble Sir Auckland Colvin K C M G , C I E Lieut Governor N W P
1891 Mr T H Wickes Chief Engineer P W D N W P
1892 The Hon ble Sir Auckland Colvin K C M G C I E Lieut Governor N W P
1893 Mr A H Harrington I C S Commissioner Meerut Division
1894 Mr J G H Glass C I E Chief Engineer P W D N W P
1895 to 1897 Principal Thomason College (Lt Col J Clibborn I S C)
1898 Offg Principal Thomason College (Lt H B D Campbell R E)
1899 to 1901 Principal Thomason College (Lt Col J Clibborn I S C)
1902 *His Honour Sir* J J D LaTouche K C S I Lieut Governor U P
1903 Principal Thomason College (Major E H deV Atkinson R E)
1904 Lt Col A E Sandbach R E 1st Sapper and Miners Roorkee
1905 Lt Col S A Thornton R A O C Station Roorkee
1906 to 1909 Principal Thomason College (Major E H deV Atkinson R E)

1910 Mr C E V Goument Chief Engineer, P W D U P

1911 to 1915 Principal, Thomason College (Lieut Colonel E H deV Atkinson C I E R E)

1916 Mr W Gunnell Wood C S I Chief Engineer, P W D U P

1917 His Honour Sir James Meston K C S I, Lieut Governor U P

1918 Mr F C Rose M I C E Secretary to the Government of India P W D

1919 Mr T R J Ward C I E M V O Inspector General of Irrigation in India

1920 Colonel Sir S D A Crookshank K C M G C B C I E, D S O M V O Secretary to the Government of India, P W D

1921 Mr St J Gebbie C I E Inspector General of Irrigation in India

1922 His Excellency Sir Harcourt Butler K C S I C I E Governor U P

1923 His Excellency Sir William Marris K C S I K C I E Governor U P

1924 Major General Sir E H deV Atkinson, K B E, C B C M G, C I E Master General of Supply

1925 Mr A C Verrieres C I E Chief Engineer P W D U P

1926 His Excellency Sir Malcolm Hailey K C S I C I E Governor Punjab

1927 Mr B D O Darley, C I E Chief Engineer, Sarda Canal, U P.

1928 Mr A H Mackenzie C I E Director of Public Instruction U P.

1929 The Hon ble Raja Bahadur Kushalpal Singh, M A, LL B, Minister for Education, U P

1930 Mr P H Tillard Chief Engineer P W D U P

1931 Mr W Roche C I E I S E, Chief Engineer, P W D, Irrigation Branch, West rn Canals U P

1932 Lieut Col C A Bird D S O R E, O C Station, Roorkee

1933 Raja Jwala Prasad Retired Chief Engineer P W D Irrigation Branch U P

1934 The Hon ble Sir J P Srivastava Kt M Sc M L C Minister for Education, U P

1935 Sir William Stampe Kt C I E I S E Chief Engineer and Secretary to Government, U P P W D, I B

1936 Mr H R Harrop M A I E S Director of Public Instruction United Provinces

1937 Lt Col W dell Haig D S O R E Chief Engineer P W D B and R Branch United Provinces

1938 Mr M R Richardson C I E I S E Chief Engineer P W D I B United Provinces and President of the Central Board of Irrigation

1939 His Excellency Sir Harry Haig K C S I C I E I C S Governor of the United Provinces

1940 Dr Panna Lall M A B Sc L L B (Cantab) D LITT (Agra) Bar at Law C I E I C S Adviser to His Excellency the Governor United Provinces

1941 Mr J C Powell Price M A C I E I E S Director of Public Instruction United Provinces

1942 Mr G Lacy B Sc C I E I S E Chief Engineer Eastern Canals United Provinces

1943 Sir William Stampe Kt C I E Irrigation Adviser to the Government of India

FROM 1890

(Of ranks included in Articles 1 to 30 only of the Warrant of Precedence, 1922.)

1890 The Hon'ble Sir Auckland Colvin, K C M G , C I E Lieut Governor, N W P

1892 The Hon'ble Sir Auckland Colvin, K C M G , C.I E Lieut Governor N -W P

1895 His Honour Sir A P MacDonnell K C S I , Lieut Governor, N -W P.

Lieut General Sir W K Elles K C B Commanding the Forces in Bengal

1900 His Honour Sir A P MacDonnell K C I S Lieut - Governor N W P

1901 The Bishop of Lucknow

1902 His Honour Sir J J D LaTouche K C S I , Lieut Governor, U P

Major General W T Shone, C B , D S O , D G M W
Major General Beresford Lovett, C B , D G M W

1903 Sir A T Arundel, K C S I , I C S , Member of the Viceroy's Council

1905 His Excellency Lord Curzon of Kedlestone P C , G M S I , G M I E , Viceroy and Governor General of India (April 8)

His Honour Sir J J D LaTouche, K C S I , Lieut - Governor, U P.

1906 Her Royal Highness the Princess of Wales (March 7)

1913 Lord Islington, P C , G C M G D S O , Chairman Royal Commission on the Public Services in India

1916 His Honour Sir James Meston, K C S I , Lieut Governor, U.P

1917 His Honour Sir James Meston, K C S I , Lieut - Governor, U P

General Sir Charles Munro, G C B , G C.M G , G C S I , Commander in Chief in India

Lieut -General Sir George Kirkpatrick, K C B , K C S I , Chief of Staff in India

1918 Lieut General Sir H D Keary, K C B , D S O , G O C Meerut Division

1919 Mr T R J Ward, C I E M V O Inspector General of Irrigation in India

General Sir Charles Munro G C B G C M G , G C S I , Commander in Chief in India

1920 Lieut General Sir Havelock Hudson, K C B , C I E G O C in C Eastern Command

1921 General Sir Claude Jacob, K C B K C M G Chief of the General Staff in India

Major General Sir Edwin Atkinson K B E , C B , C M G C I E Master General of Supply, India

Mr E St J Gebbie C I E Inspector General of Irrigation India

Mr B N Sarma Revenue and Public Works Member for Education, U P.

1922 His Excellency Sir Harcourt Butler K C S I C I E Governor U P

Field Marshall Sir William Robertson, G C B , G C M G K C V O D S O

The Hon'ble Mr. C. Y Chintamani, Minister for Education and Industries, U P.

1923 His Excellency Sir William Marris, K.C S I K C I E Governor, U. P.

His Excellency Sir Edward Maclagan, K C S.I., K C I E, Governor, Punjab

Major General Sir Edwin Atkinson, K B E, C B, C M G, C I E Master General of Supply, India

The Hon ble Raja Parmanand Minister for Education, U P

1925. The Hon ble Rai Rajeshwar Bali, O B E, Minister for Education, U P

Major General R N Harvey, C B, C M G, D S O, Engineer in Chief Army Headquarters, India

1926 His Excellency Sir Malcolm Hailey, K C S I, C I E, Governor Punjab

The Hon ble Sardar Jogendra Singh, Minister for Agriculture, Punjab

1928 His Excellency Baron Irwin of Kirby Underdale, G M S I, G M I E, Viceroy and Governor-General of India (April 11)

1929 The Hon'ble Raja Bahadur Kushalpal Singh, M A, LL B, Minister for Education, U P.

1931 The Hon'ble Mr J P Srivastava, M Sc, Minister for Education, U P.

1932 H H the Maharaja of Jaipur

Major General Addison, Engineer in Chief, Military Engineering Service in India

1933 Major General J E S Brind, Deputy Chief of the General Staff, Army Headquarters

1935 Sir Sita Ram, Kt, President, Legislative Council

1936 Major-General H S Gaskell, Engineer-in-Chief

1937 R S Weir, Esq, I E S Director of Public Instruction, United Provinces

The Hon ble Pandit Pyare Lal Sharma M A, LL B Minister for Education, United Provinces

The Hon'ble Pandit Govind Ballabh Pant B A LL B Premier and Minister of Home Affairs and Finance United Provinces

1938 F A Farquharson Esq Secretary to Government, Punjab, P W D, I B

R S Weir Esq I E S Director of Public Instruction United Provinces

1939 The Hon ble Sri Sampurnanand, B Sc Minister for Education, United Provinces

His Excellency Sir Harry Haig K C S I C I E I C S Governor of the United Provinces and Lady Haig

1940 His Excellency Sir Maurice Garnier Hallett K C S I C I E I C S Governor of the United Provinces

Dr Sir Shah Muhammad Suleman Vice Chancellor of the Muslim University Aligarh and Judge of the Federal Court

Dr Panna Lall M A B Sc LL B (Cantab) D LITT (Agra) Bar at Law C I E I C S Adviser to His Excellency the Governor United Provinces

1941 Mr J C Powell Price M A C I E I E S Director of Public Instruction United Provinces

1942 Sir William Stampe Kt C I E Irrigation Adviser to the Government of India

List of distinguished passed students of the Thomason College.

1851. C. C. Anderson, Esq.
1856. Lieutenant-General H. E. Whish.
1860. Lieutenant-General W. K. Elles.
1861. Lieutenant-Colonel W. H. Mackesy.
1863 General D. A. Jackson.
1864. W. C. Wright, Esq.
1865. H. L Monk, Esq.
1866. Lieutenant-Colonel A. C. Bigg-Wither.
1868. Lieutenant-Colonel J. F. Miller.
1868. C. G. Palmer, Esq.
1870. J. S. Slater, Esq.
1871. E. W. P. Foster, Esq.
1871. F. R. Bagley, Esq.
1872. Sir W Willcocks, K.C.M.G.
1872 G. M. R. Field, Esq.
1873. Rai Bahadur Sir Ganga Ram, C.I.E., M.V.O.
1876. W. MacDonald, Esq.
1876. W. B. Gwyther, Esq.
1877. J. T. Farrant, Esq.
1878. C. S. R. Palmer, Esq.
1878. W. E. T. Bennet, Esq., C.S.I.
1878. G. M. Harriot, Esq., C.I.E.
1879. C. E. V. Goument, Esq., C.S.I.
1881. F. E. Gwyther, Esq.
1881. R. E. Purves, Esq.
1882. G. T. Anthony, Esq.
1882. J. M. Taylor, Esq., C.I.E.
1883. F. O. Oertel, Esq.
1883. C. V. D. Pratt, Esq.
1885. A. J. Wadley, Esq.

1886 Rai Bahadur Rala Ram, C I E , I S O.
1886 C H Wollaston, Esq
1888 Sir J Eaglesome, K C M G
1889 H W M Ives, Esq , C I E
1889 F T Bates, Esq
1890 F W Allum, Esq , C B E
1891 F N Taylor, Esq , C I E , O B E
1891 C B Mellor, Esq
1892 W C W Muller Esq , O B E
1893 A C Verrières, Esq , C I E
1893 V Stainton, Esq
1894 C E Rushton, Esq
1895 R V Symons Esq , O B E
1895 Rai Bahadur Lala Bishun Swarup
1898 Sir J B G Smith C I E
1898 H Dale Green, Esq
1900 Raja Jwala Prasad
1901 E L Glass, Esq
1902 E B Robey, Esq
1904 Rai Bahadur Chuttan Lal
1904 F R Morgan Esq
1904 Rai Bahadur B Natha Singh
1905 C W M Collins Esq
1906 Rai Bahadur P L Dhawan
1906 A E Watkins Esq
1907 I I Jones Esq
1908 Khan Bahadur Mohammad Abdul Aziz C I E
1909 Rai Sahib Gurcharan Das Mehta
1911 Lakshmipati Misra Esq

The rules in this Circular are liable to revision without notice in view of possible changes in the Course of Study, orders of Government, etc.

[CIRCULAR.]

THOMASON COLLEGE OF CIVIL ENGINEERING, ROORKEE.

These rules apply to admissions in 1944 and till further notice The course of Civil Engineer class has been reduced to 2 years for the duration of the war In view of this there will be slight changes in the rules which however have not been embodied in the circular.

CIVIL ENGINEER CLASS.

1. Candidates for admission to this class through the entrance examination must be Indians as defined below.* Candidates whose parents or guardians are domiciled in Bengal, Madras and Bombay Presidencies are, however, not eligible for admission without the previous sanction of the Local Government Candidates must not be under 17 or above 21 years of age on June 1, immediately preceding the entrance examination in which they wish to appear

Overage candidates are allowed to sit for the competitive entrance examination provided they are not over 25 years of age, on June 1, immediately preceding the entrance examination in which they wish to appear Should they qualify they

* A "Native of India" means any person domiciled in British India or within the territories of Indian Princes tributary to, or in alliance with His Majesty and born of parents habitually resident in India and not established there for temporary purposes only

Successful candidates residing in United Provinces will have to furnish a domicile certificate in the form given in this circular within 15 days of the receipt of the letter from the Principal Roorkee College

will be allowed to enter the college provided the number of candidates of the correct age, who qualify, is less than the sanctioned strength of the class Such candidates will not be eligible for academic prizes or United Provinces Government scholarships

Only such private students from outside the United Provinces or States within or outside the United Provinces will be admitted to the Civil Engineer Class of the College, who previously apply through the Government of the Province or State in which they reside for permission to appear in the entrance examination and provided that the Government or State concerned agrees, in the event of such students gaining a place in the examination which would entitle them to admission, to pay a contribution towards the cost of their training, based on the actuals of the preceding financial year The only exceptions to this rule will be where the United Provinces Government agree in special cases to waive this contribution or the students themselves agree to pay it

From the entrance examination to be held in June, 1939, inclusive the Punjab Government will not nominate, nor pay for any student admitted to this College from that province There is, however, no bar to the admission of a candidate from that province should the parent or guardian of any candidate be willing to pay the cost of training in addition to the ordinary fee and living expenses at the College

The name and age of a candidate will be taken from the original university records and for candidates who have not appeared for a university examination, from college, or failing a college, from school records No alterations in the records will be recognized except in the case of purely clerical errors Application for examination must be accompanied by a true copy of university, college or school registers, as the case

may be, signed by the registrar, principal or head master and under no circumstances will any alteration be accepted to the advantage of the candidate

All Europeans before admission must be properly protected by inoculation against enteric fever to the satisfaction of the Medical Officer in charge of the College If not protected they must be inoculated on arrival at the College

2 No European or Anglo Indian will be allowed to enter the College if married or to continue in the College if he marries before completing his course

3 The College session commences on August 1 Applications for admission should *reach* the Principal *complete in all respects not later than May 1 nor before February 1*, preceding The entrance examination will be held in the first week of June or thereabouts All applications should be accompanied by a statement of—

Date of birth of the candidate

The school or schools at which he has been educated

The profession situation relationship and residence of his father or guardian

One of the examination centres where he wishes to be examined (*vide* paragraph 9)

N B —Great care should be taken to ensure that forms are complete in every respect Incomplete forms are liable to be rejected Forms of application with instructions showing how they should be filled in may be detached from the circular when required

4 Every candidate will be required to produce testimonials (which will not be returned) of good moral conduct signed by the instructor under whom he has been educated or of some other superior under whom he may have been em

will be allowed to enter the college provided the number of candidates of the correct age, who qualify, is less than the sanctioned strength of the class Such candidates will not be eligible for academic prizes or United Provinces Government scholarships

Only such private students from outside the United Provinces or States within or outside the United Provinces will be admitted to the Civil Engineer Class of the College, who previously apply through the Government of the Province or State in which they reside for permission to appear in the entrance examination and provided that the Government or State concerned agrees, in the event of such students gaining a place in the examination which would entitle them to admission, to pay a contribution towards the cost of their training, based on the actuals of the preceding financial year The only exceptions to this rule will be where the United Provinces Government agree in special cases to waive this contribution or the students themselves agree to pay it

From the entrance examination to be held in June, 1939, inclusive the Punjab Government will not nominate, nor pay for any student admitted to this College from that province There is, however, no bar to the admission of a candidate from that province should the parent or guardian of any candidate be willing to pay the cost of training in addition to the ordinary fee and living expenses at the College.

The name and age of a candidate will be taken from the original university records and for candidates who have not appeared for a university examination, from college, or failing a college, from school records No alterations in the records will be recognized except in the case of purely clerical errors Application for examination must be accompanied by a true copy of university, college or school registers, as the case

may be, signed by the registrar, principal or head master and under no circumstances will any alteration be accepted to the advantage of the candidate

All Europeans before admission must be properly protected by inoculation against enteric fever to the satisfaction of the Medical Officer in charge of the College If not protected they must be inoculated on arrival at the College

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Date of birth of the candidate

The school or schools at which he has been educated

The profession situation relationship and residence of his father or guardian

One of the examination centres where he wishes to be examined (*vide* paragraph 9)

N.B —Great care should be taken to ensure that forms are complete in every respect Incomplete forms are liable to be rejected Forms of application with instructions showing how they should be filled in may be detached from the circular when required

4 Every candidate will be required to produce testimonials (which will not be returned) of good moral conduct, signed by the instructor under whom he has been educated, or of some other superior under whom he may have been em-

ployed or brought up and these testimonials should have reference especially to his conduct during the two years immediately preceding his application for admission

5 A medical certificate must be furnished on the prescribed printed form enclosed in the circular, no other form will be accepted

NOTE—The fee prescribed by Government for this examination is Rs 4 which must be paid by the candidate direct to the Civil Surgeon or the Commissioned Medical Officer prior to the examination

6 The examination fee of Rs 20 should be deposited in any Government Treasury in United Provinces under head "XXII—Education E General—Miscellaneous, Civil Engineering College Roorkee Examination Fee" through treasury chalans which are obtainable from the Treasury The receipted treasury chalan must be attached to the application form Fee by postal money orders will be acceptable from stations where there are no Government treasuries Until the fee or the receipted Treasury chalan has been received by the Principal the candidates application will not be registered In no circumstances will this fee be refunded

7 The minimum qualifying test for admission to the entrance examination is the Intermediate Examination with Physics, Chemistry and Mathematics of the Board of High School and Intermediate Education United Provinces, or the Intermediate Examination with Mathematics, Physics and Chemistry of any University in British India established by law Those candidates who have appeared with the subjects mentioned above for this examination, before the date of the College entrance examination will also be allowed to sit provisionally for the College entrance examination Such candidates, must however, furnish with their application forms, a certificate signed by the Head of their College

showing the subjects taken by them for the Intermediate Examination The information of their passing the Intermediate Examination accompanied by a certificate from the Head of their College certifying it should be sent as soon as possible otherwise their results will be excluded from the entrance examination results of this College

8 The entrance examination is competitive and those who stand highest on the list of passed candidates (only to the number of available vacancies which is for the present fixed at 30) will be selected for admission to the College Provided the candidates pass the qualifying entrance examination *six places will be reserved for Moslems one for scheduled* castes and one for other minority communities from the United Provinces The Local Government has power to relax in very special cases the rule regarding the number of admissions Any candidate who after being duly notified fails to join the College on the day fixed for the re opening of the session or, who before that date fails to obtain from the College authorities definite permission to join on some later date will forfeit his right to admission

No replies will be given to any telegrams or letters enquiring the results of the entrance examination A copy of the printed results will be sent to each candidate when published

9 The following is the list of the [illegible] for the competitive entrance examination The examination will be held by means of written papers at the following centres only viz Roorkee Allahabad Lucknow Agra and Mussoorie* Candidates may elect the centre at which they wish to be examined

GROUP No 1—LANGUAGES (200)

(a) English Essay and Precis Writing.

3 *Hours* 100 *Marks.*

Essay —The candidates will be required to write a short essay on a given subject The subject set will not be one requiring deep knowledge or thought

Precis —A simple printed passage will be set and the candidates will be expected to give, in as few words as possible, the leading ideas expressed in the printed paragraphs No marks will be allotted to any candidate who quotes, verbatim any of the sentences given in the printed passage.

(b) General Knowledge.

1½ *Hours* 50 *Marks*

On General Knowledge questions will be set on (i) the more important topics of the day and (ii) simple literary, geographical scientific and other questions

NOTE 1 —The chief object of the English Essay Precis and the questions on general knowledge is in the first instance to test the ability of the candidates to express themselves in clear and correct English as well as their general knowledge and interest in current affairs

NOTE 2 —Marks up to 10 per cent of the maximum may be deducted for bad handwriting errors in spelling careless work and much crossing out

(c) Hindustani.

1½ *Hours* 50 *Marks*

Translation of extracts, in the Persian or Hindi character, from an easy Hindustani book, and of easy English sentences into colloquial Hindustani, and grammatical questions Full marks will not be given to candidates unable to write the Persian or Hindi character, but the Hunterian system of transliteration may be adopted.

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*The fixing of Mussoorie as a centre is conditional on seven candidates being forthcoming

GROUP II*—MATHEMATICS (400)

(a) Mathematics I—(Arithmetic and Mensuration).

3 Hours 100 *Marks*

In this paper questions will be set on (i) General Arithmetic principles and (ii) mensuration of plane rectilineal figures and of solids like parallelopipeds prisms pyramids, cones cylinders spheres and their sections

Candidates will be expected to be familiar with abridged methods of calculation

(b) Mathematics II (Algebra and Trigonometry).

3 Hours 100 *Marks*

Algebra—General algebraic principles, factors, fractions, solution of linear simple and simultaneous and of quadratic equations, elementary properties of ratio proportion and various elementary graphics and graphical solutions of equations Binomial theorem for positive index and use of binomial and exponential theorems for any index Elementary partial fractions Simple arithmetic and finite geometrical sequences Use of logarithms

Trigonometry—Trigonometrical ratios and their values in special elementary cases General properties of the ratios and identical relations between them Formulae for ratios of multiple and sub multiple angles Elementary relations between ratios and circular measure Elementary properties of triangles Use of logarithms and trigonometrical tables Solutions of triangles, heights and distances (Elementary

*No books of any kind are allowed in the Examination halls Logarithmic tables if required will be supplied by the officer conducting the examination They should not be employed to avoid ordinary abridged arithmetical calculations

properties of quadrilaterals and regular polygons). Elementary inverse notation. Solution of equations De Moivre's theorem

(c) Mathematics III (Plane and Co-ordinate Geometry).

3 Hours *100 Marks*

Plane Geometry—In this paper questions will be set on problems of plane geometry comprising the syllabus as required for the High School Examination of the United Provinces High School and Intermediate Board In Geometry proofs of prepositions and simple riders involving solution of graphical problems may be set

Co-ordinate Geometry—Elementary co-ordinate geometry of the straight line and the circle (both in cartesian and polar co-ordinates), including also the elementary properties of the parabola and the ellipse (in Cartesian co-ordinates only)

(d) Mechanics (Dynamics and Statics).

3 Hours *100 Marks*

Velocity, composition of velocities, relative velocity, acceleration, composition of acceleration; graphical representation

Laws of motion, force, units of force; moments of forces; composition of coplanar concurrent and parallel forces, couples Reduction of a set of coplanar forces and conditions of equilibrium, graphical treatment of forces Determination of centroids in simple cases, Friction and its laws.

Projections neglecting resistance; motion in circular path; centripetal and centrifugal forces; principles of conservation of momentum and energy; angular velocity and acceleration; moments of inertia in very simple cases; simple harmonic motion; simple and compound pendulums.

GROUP No III—SCIENCE (200)

(a) Physics

3 Hours 100 *Marks*

Simple Physical Measurements liquids and gases Barometry

Heat and Temperature Thermometry and calorimetry expansion with variations of temperature Fusion evaporation boiling point vapour pressure latent heat conduction, convection radiation and mechanical equivalent of heat

The production and propagation of sound, nature of wave motion reflection of sound resonance and determination of velocity

Propagation reflection and refraction critical angles, mirrors lenses spectrum simple telescope microscope photometer

Properties of magnets induction magnetic fields lines of force the law of magnetic force and magnetic moments

Conductors and insulators eleltrification by friction and induction influence machines distribution of electrical charge on conductors potential electrical capacity, primary cells properties of the electric current currents and resistance measurements Ohm s law series and parallel connections, shunts

No practical examination is prescribed but all candidates are expected to have previously undergone an elementary course of practical work in a laboratory

(b) Chemistry

3 Hours 100 *Marks*

General properties of matter simple and compound substances laws of chemical combination, acid bases and salts, metals and non metals combustion oxidation and re-
Atomic and molecular weights chemical equivalents,

atomic theory, symbols, formulae, simple chemical equations, Avogadro's rule Dulong and Petit's law Boyle's law, Charles's law vapour density, diffusion, and an elementary knowledge of solution dissociation and electrolysis The preparation general properties and principal compounds of hydrogen, oxygen, nitrogen the halogens, carbon, sulphur, phosphorous and silicon

No practical examination is prescribed, but all candidates are expected to have previously undergone an elementary course of practical work in a laboratory

GROUP No IV—DRAWING* (150)

(a) Geometrical Drawing

3 *Hours* 100 *Marks*

Printing Simple Diagonal and Vernier Scales Drawing of plane Geometrical figures, arches, projections and sections of simple solids The course is covered by Chapters 1—7 inclusive of the Thomason College Manual of Drawing, Part I

(b) Freehand Drawing.

2 *Hours* 50 *Marks*

Drawing of any architectural ornament or pattern to a reduced or enlarged scale All work will be done freehand, no rulers, etc , being allowed

10 To pass the examination a candidate is required to obtain 50 per cent marks in each of the four groups No marks will be allotted in any paper, if a candidate obtains less than 20 per cent and up to 10 per cent of the marks in each paper may be deducted for slovenly work

11 Sixteen scholarships of Rs 50 a month are sanctioned for this class out of which three are reserved for

*Particular attention is called to this subject in which many candidates fail to qualify

students from the scheduled castes one in each year Of these scholarships six will be awarded to first-year students, five to second-year students and five to third-year students

These scholarships are awarded to first year students on the results of the entrance examination and to second and third year students on the results of the first and second year's work and examinations, and are tenable for the *nine months of the College session* All the scholarships are reserved for candidates of the United Provinces

Government has been pleased to sanction the award of a Passing Out Scholarship of approximately Rs 250 to Rs 300 payable from the College Stores Trust Fund to the senior European or Anglo Indian student who successfully passes the third year Final Examination of the Civil Engineer Class after completing the whole course of three years

12 A College tuition fee of Rs 24 per mensem will be paid during the session by each student of the class irrespective of his domicile

13 The engineer class students maintain and run a common mess, catering for vegetarians non vegetarians and those messing according to European diet The students in the running of this mess are helped by a member of the staff appointed by the Principal each session, as President All students are advised to join Should they not do so, they have to make their own arrangements for messing

14 Students are encouraged to take up military training by joining either the Indian Auxiliary Force or the University Training Corps Physical Training is compulsory

15 It is desirable that every student should be able to swim before joining the College

16 Each student should on joining the College be provided with a good set of drawing instruments and necessary

class books for his own use Class books are obtainable at the College Book Depot

17 Quarters are provided for all students of the Civil Engineer Class in hostels near the College, a student being given a room to himself The charges for rent and conservancy are Rs 5-12 per mensem The hostels have been electrified, the charges for current being annas four per unit Students have to provide their own fans

18 A limited number of sets of furniture, as detailed below, are available for issue to students in order of seniority for which a monthly rental of Rs 2 8 is charged —

1 Bed cot with mosquito frames and mattress
1 Armless chair
1 Easy chair
1 Table (large), with book shelf
1 Small table
1 Towel rack
1 Chest of drawers

Students should arrange to bring their own mosquito nets and durries

19 Every candidate before he can be allowed to join the College must satisfy the Principal that he has sufficient means to defray his expenses during his course at Roorkee

Any student failing to pay his College dues,* or to make sufficient progress in study, will be suspended or ultimately

*The words College dues" include—
(i) College fees
(ii) Rent and conservancy
(iii) Rent of College furniture
(iv) Electric current charges
(v) Recreation fund subscription and cost of articles purchased from recreation stores
(vi) Al [illegible]
(vii) Al [illegible]
(viii) A [illegible]
Mess

removed from the College The parent or guardian of any student so suspended or removed shall be held responsible for the payment of any debts whatsoever which may have been contracted while the student was in the College Although every precaution is taken to prevent students from running into debt, the College authorities are in no way to be considered responsible for such debt

20 The College year usually commences on August 1 and closes on July 1 Candidates admitted to the College on the results of the entrance examination held in June will be informed on what date to join the College in the following October

21 Students in the Civil Engineer Class are trained for the Indian Engineering Services and the Civil Engineering profession generally Many have gained employment outside India

22 **The Civil Engineering Course extends over three years** In the third year in March the final examination is held, when those students who have completed their course of study and have qualified will be awarded a diploma in Civil Engineering and will be entitled to use the letter C E (Roorkee) after their names

A fee of Rs 40 is payable in the third year in February by each student, who intends to appear for this examination If a student, having paid the fee, does not eventually appear for the examination, the fee will not be refunded

23 The marks each student has to obtain to qualify for admission to the second and third year and to obtain the College Diploma in Civil Engineering, awarded upon completion of his third year are as follows —

(a) For admission to the second year the first year students are required to obtain 33 per cent of the marks allotted to each Sub Group for written

examinations and practical work respectively and 50 per cent of the total marks

(*b*) To return to the College at the end of the second year the students are required to obtain 35 per cent of the marks allotted to each Sub Group for written examination and practical work respectively in that year (i e in the second year) and 50 per cent of the total marks for the two years i e of the full marks for the second year together with the reduced marks of the first year

(*c*) To pass out of the College at the end of the third year the students are required to obtain 33 per cent of the marks allotted to each Sub Group for written examination and practical work respectively, in that year (*i e* the third year), and 50 per cent of the total marks for the three years i e of the full marks for the third year together with the reduced marks for the first and second years

(*d*) The ordinary Diploma is awarded to students who qualify as above and obtain less than 66 per cent of the total marks The honours Diploma is awarded to students who qualify as above and obtain 66 per cent or more of the total marks Students who fail in any year will be allowed to repeat their course provided their stay in the College does not exceed four years on condition that such a student will not be eligible for academic prizes, scholarships or *guaranteed* appointments

Cases of failures due to prolonged absence through sickness or other circumstances, beyond the students' control, will be considered and decided upon their merits

24 No student will be eligible for any College academic prizes unless he completes his course concurrently with the students who entered the College in the same year

25 Arrangements for giving practical training to Engineer students of the United Provinces upon completion of their course at the College will be made as far as possible in the United Provinces Public Works Department Irrigation and Buildings and Roads branches During the period of such practical training no allowances of any kind are now sanctioned

26 The list of the text books etc used in the Civil Engineer classes of the College is given on page 91 The prices quoted are approximate

27 Drawing instruments drawing boards, T-squares, etc are procurable in the Bazar, every student must provide himself with these at his own cost

28 Any student who is expelled from the College for misconduct, will not be allowed to appear in any examination conducted by the College

29 Students will not be permitted to appear for any external examinations during their College course

30 All students have to be in possession of the booklets of *Standing Orders* and *Course of Study* A plea of ignorance for the breach of any of the former is not accepted A copy of each of these booklets will be issued to each new student on arrival and the cost recovered in his first bill Students therefore should not provide themselves with out of date copies

Any student requiring an extra copy of the Course of Study may obtain it on payment from the Assistant Superintendent, Government Press, Roorkee Branch, Roorkee

MADAN GOPAL SARDANA,
Principal, Thomason College

ROORKEE
October, 1943

Memorandum of Expenses of Students of the Civil Engineer Class

THE following information is published for the guidance of parents and guardians, and for their assistance in determining the probable expenses of a course of instruction at the College Economical management is aided as far as possible by the College authorities

It must be clearly understood that students cannot be permitted to remain in the College if their dues* of any kind are not paid promptly on demand The probable expenses of a student while at the College are shown under three heads, viz the initial expenses at the beginning of each yearly term and the monthly current expenses and the final examination expenses All College dues must be paid before the 21st of the month to which they relate and any student in arrears on the first of each month will lose all marks for any examination that may occur between this date and that on which he clears his account Guardians are advised to send the above amounts direct to the Principal, and, if convenient, the whole remittance intended for the student can thus be sent, and the balance will at once be made over to him

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* NOTE—The words " College dues ' include—
  (i) College fees
  (ii) Rent and conservancy
  (iii) Rent of College furniture
  (iv) Electric current charges
  (v) Recreation fund subscription and cost of articles purchased from recreation stores
  (vi) All dues in connexion with Engineer Class Club
  (vii) All dues of College dairy, College shoe maker, College shop-keeper, College tailor, College sweet seller and College stores
  (viii) All dues in connexion with Common Civil Engineer Class Mess

Details of Expenses

Each student upon first joining the College and at the commencement of each subsequent year has to incur certain non recurring expenses The details of these with approximate costs, as far as it is possible to give them, are stated below *Every student has to have certain text-books* of his own for the year's work These books are obtainable at the College Book Depot at prices 12½ per cent lower than published prices The costs quoted take this into consideration The list of these books is given on page 91

N B.—List and prices are liable to alteration Prices shown are all approximate.

Details	Price	Remarks
Upon first joining	Rs a	
Box of drawing instruments		Prices too variable to be quoted.
T-square, 36"	.	
Set squares, 45° and 60°		
Brushes and colours .		
Two drawing boards (24"×36" and 24"×18")		
One ten inch slide rule	.	
One case of architectural scales .		
One case of engineer's and surveyor's scales		
One workshop tool set comprising		
1 steel L square		
1 steel rule, 12" . ..	..	
1 pair inside callipers ..	.	
1 pair outside callipers	..	
1 pair of wing compasses		
Text books	57 15	
Level books, each	1 4	
Survey field books, each . ..	0 12	
Survey note books, each . ..	3 0	
Entrance fee		
C E. Recreation, Sports and Regatta ..	15 0	Obligatory to join
C. E. Students' Club	10 0	
C. E. Students' Common Mess .	2 0	Optional.

Details	Price	Remarks
	Rs a	
Commencement of 2nd year		
1 Chesterman steel woven tape 100 feet Text books say	7[illegible] 5	
Commencement of 3rd year		
Text books say	38 0	
At end of 3rd year		
Final examination fee	40 0	

Monthly expenses

(9 *months only*)

Items	Price	Remarks
	Rs a	
College fee	[illegible]4 0	Fixed obligatory charges
Rent and conservancy	5 12	
Rent of College furniture	2 8	
Subscription C E Recreation Sports and Regatta	7 0	
Ditto Students Club	3 0	
College Magazine subscription	0 4	
Subscription C E Common Mess	1 0	Joining the Mess is optional Those who do not join make their own arrangements
Vegetarian Messing	[illegible]3 0	
Non-vegetarian Messing	31 0	
Electric light	3 0	Rs 5 if fan is used
Bearer say	1[illegible] 0	
Bhisty say	2 0	Approximate only
Dhobi say	3 0	
Sweeper say	2 0	

List of essential text books

Particulars	Cost
Civil Engineer Class—I Year	Rs a
" Dynamics "—Landon	5 8
" Statics "—Puri B D	5 1.
" Examples in Theory of Structures "—Landon	3 8
" Theory of Structures "—Morle	8 8
" Roorkee Treatise on Surveying " Part I	3 3
" Heat for Engineers "—Darling	7 12
" Heat Engines "—Low	10 0
" Theory of Machines "—Mackay	13 12
Total	57 15
Civil Engineer Class—II Year	
" Structural Engineering "—Husband and Harby	10 1.
" Roorkee Treatise on Bridges	7 0
Military Engineering (Volume V) Roads 1935	5 0
" Roorkee Treatise on Railways "	5 1
" Roorkee Treatise on Surveying "—Part II	2 10
" Callendar s Steam Tables "	2 4
" Moll er s Diagrams	1 4
Maccal s " Continuous Current "	0 8
Maccal s " Alternating Current "	1 8
Applied Theory of Dynamics "—Robinson	10 12
" Hydraulics " by Lewitt	8 10
" Indian Water Works Practice by Banerjee	
Total	72 5
Civil Engineer Class—III Year	
" Elements of Reinforced Concrete Design "—Adams	5 0
" Concrete Plain and Reinforced by Taylor Thomson, Volume I	27 0
" Sewers " by Bevan and Rees	6 0
" Sewage Purification and Disposal by Kershaw	
Total	38 0

Notes for the guidance of candidates when filling in application forms for Entrance Examination for classes in the Thomason College.

General

IMPORTANCE.

It is impressed upon candidates that failure to observe these instructions implicitly must result in prolonged correspondence and possibly the rejection of the application All forms when sent to this College should be pinned together. All forms must be kept clean

NAME OF CANDIDATE.

The full name of the candidate *and not initials* must be shown on all papers and it is important to note that only the name as entered in the educational certificate must be used Spelling of name should be the same in all the forms as are in the educational certificate or, as will appear in the *Gazette* in case of provisional candidates No additions to or omissions from that name will be permitted In the case of Europeans or Anglo-Indians the production of a birth or baptismal certificate in support of additional Christian or surname will not be recognized.

DATE OF BIRTH.

The date of birth as entered in the application forms must be the same as that entered in the educational certificate which must be certified The production of a birth certificate or horoscope will not be accepted as proof for any change from the date given in the educational certificate

GENERAL.

Separate forms should be filled in for each Examination i e for Civil Engineer, Overseer or Draftsman classes

Particular

MORAL CHARACTER CERTIFICATE.

It should generally be signed by the Head Master or the Principal of the institution in which the candidate has studied, failing this by a gazetted officer other than the relation of the candidate The words ' last two years'' should be crossed out only when the candidate has been in two institutions in which case two separate certificates should be obtained and furnished These should relate to the period he has been in each institution and the period should be stated

EDUCATIONAL CERTIFICATE.

A word to word copy of the Intermediate Examination certificate in case of Civil Engineer class and the High School Examination in the case of the Overseer class candidates verified by a government gazetted officer should be furnished If the candidate has only appeared at the Examination a certificate from the Principal or the Head Master stating that he has appeared at the Intermediate Examination or the High School Examination showing the year in which he has appeared should be furnished The result of such examinations should be communicated to the Principal as soon as they are published Full designation of the verifying officer and the date on which he verifies the certificate should be given under his signatures

MEDICAL CERTIFICATE

It should be signed by a Commissioned Medical Officer belonging to an all India Service or by an officer in charge of a Civil Station (i e Civil Surgeon) A certificate signed by a Medical Officer in charge of a Civil Hospital is not sufficient unless the officer comes within one of the above catagories Marks of identification should be caused to be entered by th

FORM No. 1.

Moral Certificate required from candidates for admission to the Entrance Examinations of Civil Engineer Class of the Thomason College, Roorkee.

Certified that———————————————bears a good moral character and has done so for the last two years.

STATION————

Date————

Signature and designation of Instructor under whom educated, or superior under whom employed or brought up.

FORM No. 2.

Copy of Educational Certificate to accompany application of candidate for admission to the Thomason College, Roorkee.

Verified

(Signature of any gazetted officer of Government)

FORM No 3

Medical Certificate to accompany application of candidate for *admission to the Thomason College, Roorkee.*

I CERTIFY that I have carefully examined——————————————————, that his eye sight is of the standard prescribed,* that he is fairly robust, and his constitution is sound, and that he has no disease, bodily or mental infirmity unfitting him now or likely to unfit him in the future, for active out door service in the Public Works Department

Marks of identification

Station———— *Signature*————————

Dated—————— *Designation*———————

N B —The above certificate must be signed *by a Commissioned Medical Officer or by a Medical Officer in charge of a Civil Station within a month* before date of submission and must include a description giving clearly the personal marks of identification of the Candidate who has been medically examined No other certificate will be accepted, nor will application be entertained unless the above rules be strictly complied with

*Please quote the no of para if the eye sight of the Candidate is according to one of the prescribed paras on reverse

Standard of eye-sight required for admission to the Department of Public Works of India.

1 If myopia in one or both eyes exists, a candidate may be passed, provided the ametropia does not exceed 3 5 D, and if, with correcting glasses not exceeding 3 5 D, the acuteness of vision in one eye equals $\frac{6}{9}$, and in the other $\frac{6}{6}$ there being normal range of accommodation with the glasses

2 Myopic astigmatism does not disqualify a candidate provided the lens or the combined spherical and cylindrical lenses required to correct the error of refraction, does not exceed 3 5 D, the acuteness of vision in one eye, when corrected, being equal to $\frac{6}{9}$, and in the other $\frac{6}{6}$, together with normal range of accommodation with the correcting glasses, there being no evidence of progressive disease in the choroid or retina

3 A Candidate having total hypermetropia not exceeding 4 D is not disqualified provided the sight in one eye (when under the influence of atropine) equals $\frac{6}{9}$, and in the other equals $\frac{6}{6}$ and with + 4 D glasses or any lower power

4 Hypermetropic astigmatism does not disqualify, provided the lens or combined lenses required to cover the error of refraction do not exceed 4 D, and that the sight of one eye equals $\frac{6}{9}$, and the other $\frac{6}{6}$, with or without such lens or lenses

5 A Candidate having a defect of vision arising from nebula of the cornea is disqualified if the sight of one eye be less than $\frac{6}{12}$ In such a case the better eye must be emmetropic Defects of vision arising from pathological or other changes in the deeper structures of either eye, which are not referred to in these rules may exclude a Candidate

6 A Candidate is disqualified if he be unable to distinguish the principal colours (achromatopsia)

7. Paralysis of one or more of the exterior muscles of the eyeball disqualifies a Candi[illegible] for it

FORM No 3

Medical Certificate to accompany application of candidate for admission to the Thomason College, Roorkee.

I CERTIFY that I have carefully examined———————————————, that his eye-sight is of the standard prescribed,* that he is fairly robust, and his constitution is sound, and that he has no disease bodily or mental infirmity unfitting him now or likely to unfit him in the future, for active out door service in the Public Works Department

Marks of identification

Station———— *Signature*————————

Dated—————— *Designation*————————

N B —The above certificate must be signed *by a Commissioned Medical Officer or by a Medical Officer in charge of a Civil Station within a month* before date of submission and must include a description giving clearly the personal marks of identification of the Candidate who has been medically examined No other certificate will be accepted nor will application be entertained unless the above rules be strictly complied with

*Please quote the no of para if the eye sight of the Candidate is according to one of the prescribed paras on reverse

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4 Hypermetropic astigmatism does not disqualify, provided the lens or combined lenses required to cover the error of refraction do not exceed 4 D and that the sight of one eye equals $\frac{6}{9}$ and the other $\frac{6}{6}$ with or without such lens or lenses

5 A Candidate having a defect of vision arising from nebula of the cornea is disqualified if the sight of one eye be less than $\frac{6}{12}$ In such a case the better eye must be emmetropic Defects of vision arising from pathological or other changes in the deeper structures of either eye, which are not referred to in these rules may exclude a Candidate

6 A Candidate is disqualified if he be unable to distinguish the principal colours (achromatopsia)

7. Paralysis of one or more of the exterior muscles of eyeball disqualifies a Candidate for it

FORM No 4.

University, College or School Certificate of age required in case of Candidates for the Entrance Examination of the Thomason College, Roorkee, United Provinces.

Certified that the date of birth of——————————

——————————————————————

son of——————————as entered in the records

of the—————————————— (a) { University. College. School

is——————

Signature of—

STATION

Date

(a) { Registrar————University. Principal————College. Head Master————School.

(a) Two of these to be struck out

FORM No 6

Statement of age, Education etc. to accompany application for admission to the ——————Class of the Thomason College Roorkee

Name of candidate	Date of birth as furnished to the highest institution of these three—— (1) University (2) College (3) School	Province of domicile of the father and if father not living of guardian where he must have definitely settled and resided for a period of three years	School or College at which educated	Name, profession situation residence and caste of father or *if father not living* of guardian showing relationship of latter to candidate	Centre selected in case of candidates of United Provinces for the C E Class

I am willing to be vaccinated on admission

Place——————————

Date——————————

——————————
Signature of candidate

——————————
Signature of Head Master or forwarding officer

Permanent address } ——————————

Certificate in case of all candidates (one of which is to be crossed out and the other installed)—

Certified that I have appeared for the Entrance Examination of the——————Class of the Thomason College Roorkee in the year————and my Roll no was————

Certified that I have not appeared for any Entrance Examination of the Thomason College Roorkee

Since seats are reserved in the Civil Engineer and Overseer classes for United Provinces candidates of the minority communities which include depressed classes also it would be in the interest of the candidates if they give their caste prominently should they belong to any noted on reverse of the form

Signature of candidate

List of castes of the United Provinces included in the "Depressed Classes."

1. Throughout the Provinces—

Agariya	Hari
Aherya	Hela
Badi	Kanjar
Badhik	Kalabaz
Baheliya	Kharot
Bajaniya	Kharwar (*except* Benbansi)
Bajgi	Khatik
Balahar	Kol
Balmiki	Korwa
Banmanus	Lalbegi
Bansphor	Majhwar
Barwar	Nat
Basor	Pankha
Bawariya	Parahiya
Beldar	Pasi
Beriya	Patari
Bengali	Rawat
Chamar	Saharya
Chero	Sanaurhiya
Dabgar	Sansiya
Dhangar	Shilpkar
Dhanuk (Bhangi)	Bhantu
Dharkar	Kapariya
Dhobi	Bhuiya
Dom	Karwal
Domar	Tharu
Gharami	Bhuiyar
Ghasiya	Khairaha
Gaul	Turaiha
Habura	Boriya

2 Throughout the Province *except* in the Agra, Meerut and Rohilkhand divisions—Kori

FORM No 7

CERTIFICATE OF NATIONALITY, DOMICILE AND RESIDENCE

Certified that————————————————

who is candidate for the Entrance Examination for admission to the $\frac{\text{Civil Engineer}}{\frac{\text{Overseer}}{\text{Draftsman}}}$ class of the Thomason College of Civil Engineering, Roorkee, resides at——————, District ——————and is

(a) a *natural born British subject the domicile of origin* of whose father is in the United Provinces and who himself is domiciled in the United Provinces,

Or

(b) a natural born British subject the domicile of origin of whose father was not the United Provinces but who or whose father has acquired a domicile in the United Provinces provided that the candidate himself has after such acquisition resided in the United Provinces for not less than five years on the date on which he applies for admission to the entrance examination of this College

Or

(c) a *natural born British subject* who was *born in the* United Provinces and whose father is (or if *dead* was at the time of his death) employed in any department of the Central Government and is, or was, liable to inter-provincial transfers, provided that he has himself resided in the

United Provinces for three continuous years, immediately preceding the date of application for admission to the entrance examination of this College, or

(*d*) A ruler or a subject of the Indian State or a Native of a tribal area or territory adjacent to India, in respect of whom or which a declaration has been made by the Government of the United Provinces under sub section (2) of Section 262 of the Government of India Act, 1935

Place———— *District Magistrate*

Dated———— ————*District.*

NOTE —This form should be kept by the candidates carefully and furnished when called for

The rules in this Circular are liable to revision without notice in view of possible changes in the Course of Study, orders of Government, etc.

[CIRCULAR]

THOMASON COLLEGE OF CIVIL ENGINEERING, ROORKEE.

These rules apply to admissions in 1914 and till further notice

OVERSEER CLASS

1 The Overseer Class has been constituted at the College to meet the requirements of the Subordinate Engineering Service of the Public Works Department of the United Provinces and of the public demands for a class of men trained as overseers

2 Candidates for admission to this class must not be under 16 or above 21 years of age on June 1, immediately preceding the entrance examination in which they wish to appear

Overage candidates are allowed to sit for the competitive entrance examination provided they are not over 25 years of age on June 1 immediately preceding the entrance examination, in which they wish to appear Should they qualify, they will be allowed to enter the College provided the number of candidates of the correct age who qualify is less than the sanctioned strength of the class Such candidates will not be eligible for academic prizes or United Provinces Government scholarships

The name and age of a candidate will be taken from the certificate granted by the Board of High School and Inter-

mediate Education or University as the case may be alteration in them will be recognized except in the case purely clerical errors

for revised rule 3 see /

3 The class is intended primarily for Europeans, Ang Indians and Indians residents within the United Provin excluding States within it Extra provincial candidates w be admitted only if vacancies remain after the admission the United Provinces candidates An annual contribution charged for extra provincial candidates This contribution based on the actual expenditure of the preceding financial ye and will be intimated by the Principal on inquiry being ma to him Where a candidate is willing to bear this contrib tion himself, the application for permission to appear in th admission examination may be submitted direct to th Principal, otherwise it should be submitted through the Gov ernment of the Province or State in which the candidat resides The Government or State forwarding such an appli cation should clearly state that in the event of the candidate obtaining in the examination a place which entitles him to admission the Government or State concerned will be willing to pay the above contribution The United Provinces Government may, in special cases, waive this contribution

4 Applications for admission should reach the Principa , **Complete in all respects, not later than May 1, nor before February 1,** preceding the entrance examination accompanied by a statement of—

The date of birth of the candidate

The school or schools at which he has been educated

Successful candidates residing in United Provinces will have to furnish a domicile certificate in the form given in the circular within 15 days of the receipt of the letter from the Principal, Roorkee College "

The profession, situation, relationship and residence of his father or guardian.

N.B.—Great care should be taken to ensure that forms are complete in every respect. Incomplete forms are liable to be rejected. Forms of application with instruction showing how they should be filled in may be detached from the circular when required.

5 Every candidate will be required to produce testimonials (copies properly certified by a Government gazetted officer will be accepted), which will not be returned, of good moral conduct, signed by the instructor under whom he has been educated, or of some other superior under whom he may have been employed or brought up, and these *testimonials should have reference especially to his conduct* during the two years immediately preceding his application for admission

6 The qualifying tests for admission to the entrance examination will be the High School ex[illegible]ation conducted by the Board of Education [illegible]ited Provi[illegible] or the School Leaving Certificate examin[illegible] this pr[illegible] or the Matriculation examination of the [illegible] [illegible]ad Uni[illegible] (or equivalent examination of other pr[illegible] at pre[illegible] [illegible]d by the United Provinces Board [illegible] [illegible]mediate Education for purposes [illegible] Senior Cambridge examination [illegible] Final examination under the Co[illegible] [illegible]pean [illegible]hools in force in Bengal [illegible] [illegible]s, [illegible]ed Provinces, Punjab [illegible] also [illegible] [illegible]ed Those candid[illegible] [illegible] for an[illegible] [illegible]minations, noted [illegible] the [illegible] [illegible]lege entrance [illegible] of wh[illegible] published [illegible]

mission of their applications to the Principal, are allowed to sit provisionally for the College entrance examination Such candidates must, however, furnish with their application forms a certificate signed by the Head of their school or College, stating that they have so appeared Their marks will be excluded from the result sheet if the information of their passing the qualifying tests are not communicated before the publication of the results of this College

7 The examination fee of Rs 10 should be deposited in any Government Treasury in United Provinces under head XXVI—Education E General—Miscellaneous Civil Engineering College Roorkee Examination Fee , through treasury chalans which are obtainable from the Treasury The receipted treasury chalan must be attached to the application form Fee by postal money orders will be acceptable from stations where there are no Government treasuries Until the fee or the receipted Treasury chalan has been received by the Principal the candidate's application will not be registered In no circumstances will this fee be refunded

8 A medical certificate must be furnished on the prescribed printed form enclosed in the circular no other will be accepted Students of the Draftsman class when appearing for the Entrance examination of this class need not submit a fresh medical certificate

NOTE—The fee prescribed by Government for this examination is Rs 4 which must be paid by the candidate direct to the Civil Surgeon or the Commissioned Medical Officer prior to the examination

9 The candidate must be acquainted with both the English language and the modern Indian languages, and able to speak, read and write them with tolerable ease and accuracy. He must pass an entrance examination in the following subjects, which will be held during the first week in June, at the following centres viz , Roorkee, Agra, Lucknow Allahabad and at any other centres at the discretion of the Principal

SUBJECTS OF EXAMINATION AND MARKS

Paper No.	*Subject*	*Full marks*	*Qualifying Marks.*	*Time allowed*
1	English Composition (Essay)	75	42	2½ hours.
1A	English Dictation (neatness, correct spelling, punctuation and writing will be taken into account)	50		½ hour.
2	Modern Indian Languages Translation of extracts in Nagri or Nastal q from any easy book and of easy English sentences into colloquial and grammatical questions	75	25	3 hours.
3	Arithmetic Candidates will be expected to be familiar with all the general arithmetical principles, and able to solve arithmetical problems	100	33	3 „
4	Algebra Fundamental laws and definitions The methods of addition, subtraction, multiplication and division, H C F, L C M, factors, fractions, and simple and elementary simultaneous equations	100	33	3 „
5	Geometry and Mensuration Geometry —Hall and Stevens Parts I IV or any other book prescribed by the Board of High School and Intermediate Education for the High School Examination Mensuration Pierpoint Part I 40 per cent of this paper will be reserved for questions on plane mensuration of the High School Standard	100	33	3 „
6	Drawing Printing, scales and simple geometrical figures (as in the Thomason College, Roorkee, Drawing Manual, Part I, Chapters I—IV)	100	33	3 „

N.B.—One half of the total marks are required for passing

10. The entrance examination is competitive, and those who stand highest on the list of passed candidates (only to the number of available vacancies, which is for the present fixed at 40), will be selected for admission to the College Provided the candidates pass the qualifying entrance examination, eight places will be reserved for Moslems, one for scheduled cases and one for other minority communities. Any

candidate who, after being duly notified, fails to join the College on the day fixed for the reopening of the session, or, who before that date fails to obtain from the College authorities definite permission to join on some later date, will forfeit his right to admission

11 No degree certificate, etc , obtained by him at any other institution will entitle a candidate to enter the College nor will it exempt him, in whole or in part, from the entrance examination above detailed

12 Each examination is complete in itself, and no credit for marks gained in one examination is carried on to any other examination A candidate who has failed in, or withdrawn from an examination after his name has been registered and presents himself for examination on a subsequent occasion, must undergo the full examination and furnish a fresh fee and certificates **No replies will be given to any telegram or letter enquiring the results of the entrance examination.** A copy of the printed result will be sent to each candidate when published

13 In this class a College fee of Rs 6 a month during the session will be charged to students admitted through the entrance examination All students of this class will be provided with unfurnished quarters in the College hostels at a monthly rent of Re 1, but no member of a student's family is allowed to reside in them with him

The hostels have been electrified, the charges for current being annas four per unit Students must provide their own fans

14 There will be 8 scholarships of the value of Rs 25 per mensem, each tenable for the nine months of the College session, awarded annually on the results of the entrance examination and on the first year's work and examinations

out of which one is reserved ...
from the scheduled castes ...
United Provinces candidates

15 Each student ...
the purchase of the necess...
The probable expenses are ...
should present himself for
meet all charges as well ...
dressing in decent and cl...

16 Any student faili...
make sufficient progress in
satisfactory will be suspended ...
College The parent or ...
or removed shall be held re...
debts whatsoever which may ...
student was in the Coll...
taken to prevent students from ...
authorities are in no way to ...
debt

17 The course is of two y...
session commences on or about ...
1 following Examinations ...
and second sessions Any stud...
standard prescribed in these two ...
to repeat his course provided his ...
exceed three years Such a stud...

Note—*The words College dues ...
(i) College fee
(ii) Rent and conservancy
(iii) Rent of College furniture,
(iv) Electric Current charges
(v) Recreation fund subscription and ...
recreation stores
(vi) All dues in connexion with Overs...
(vii) All dues of College Dairy Co...
keeper College tailor College ...

academic prizes, Government scholarships or guaranteed appointments

Failures due to prolonged absence through sickness or other circumstances beyond the student's control will be considered and decided upon the merits of the case

For admission to the second year a student has to obtain at least 33 per cent of the marks allotted to each group and 45 per cent of the grand total At the close of the second session the final examination will be held and a student is required to obtain 33 per cent in each group and 45 per cent in the aggregate

18 The College vacation will be from July 15 to October 16 or thereabouts Students will not be allowed to stay in the College hostels during the vacation

19 Upon successful completion of the course two classes of certificates are awarded as follows

I The Higher Certificate, awarded to students obtaining at least 45 per cent in each group and 60 per cent of the total marks

II The Ordinary Certificate, awarded to students obtaining at least 33 per cent in each group and 45 per cent of the total marks

20 Every endeavour will be made to give unpaid practical training to all the United Provinces students but no guarantee in this respect can be given

21 The list of the text books etc, used in the class, is given on pages 117 and 118 The prices quoted are approximate Books are available at the Book Depot in the College

22 Drawing instruments, drawing boards T squares etc, are procurable in the bazar Every student must provide himself with these at his own cost

23 Any student who is expelled from the College for misconduct will not be allowed to appear in any examination conducted by the College

24 It is desirable that every student should be able to swim before joining the College

25 Students will not be permitted to appear for any external examinations during their College course

26 All students have to be in possession of the booklets of Standing Orders and Course of Study A plea of ignorance for the breach of any of the former is not accepted A copy of each of these booklets will be issued to each new student on arrival and the cost recovered in his first bill Students therefore should not provide themselves with out of date copies

Any student requiring an extra copy of the Course of Study may obtain it on payment from the Assistant Superintendent, Government Press Roorkee Branch Roorkee

ROORKEE: MADAN GOPAL SARDANA,

October , 1943 *Principal*

Memorandum of the Expenses of Students of the Overseer Class

The following information is published for the guidance of parents and guardians, and for their assistance in determining the probable expenses of a course of instruction at the College

Economical management is aided as far as possible by the College authorities

It must be clearly understood that students cannot be permitted to remain in the College if their dues* of any kind are not paid promptly on demand

The probable expenses of a student while at the College are shown under two heads, viz (i) the initial expenses of each yearly term, and (ii) the monthly current expenses

Details of Expenses

Each student upon first joining the College and at the commencement of the second year has to incur certain

*Note—The words College dues include

(i) College fees
(ii) Rent and conservancy
(iii) Rent of College furniture
(iv) Electric current charges
(v) Recreation fund subscription and cost of articles purchased from recreation stores
(vi) All dues in connexion with Overseer Class Club
(vii) All dues of College Dairy, College shoe maker College shop keeper, College tailor College sweet seller and College stores

non-recurring expenses The details of these with approximate costs, as far as it is possible to give them, are stated below. Every student has to have certain text books of his own for each year's work. These books are obtainable at the College Book Depot at prices $12\frac{1}{2}$ per cent. lower than published prices The costs quoted take this into consideration. The lists of these books are given on pages 117-118

Details	Price	Remarks
Upon first joining	Rs a	
Box of drawing instruments	..	
T square, 36"	..	
Set squares, 45° and 60°	.	
Brushes and colours	..	
Two drawing boards (24"×36" and 24"×18")	..	
One case of architectural scales .	.	
One case of engineer's and surveyor's scales	..	Prices too variable to be given
One Chesterman steel woven tape, 100 feet	..	
One workshop tool set comprising		
1 steel L square	.	
1 steel rule 12"	.	
1 pair inside callipers .	..	
1 pair outside callipers .. .	..	
Text book say	46 8	
Level books each . ..	1 4	
Survey field books, each	0 12	
Survey note books, each	3 0	
Entrance fee		
Overseer Class Club and recreation ..	3 0	
Commencement of second year		
Text-books, say	46 0	

Monthly expenses

(9 months only)

Item	Price	Remarks
	Rs a	
College fee	6 0	Fixed obligatory charges
Rent	1 0	
Subscription Overseer Class Club recreation and boating	5 0	
College magazine subscription	0 4	
Electric energy	3 0	If fan used, Rs 5
Cook, say	1 8	Approximate only
Servant say	1 8	
Dhobi say	1 8	
Messing hire of furniture, etc		*Whatever a student may make it.*

List of essential text books

Particulars	Cost
	Rs a
OVERSEER CLASS—I YEAR	
Roorkee Treatise on Earthwork "	1 12
" Building Construction Advanced Course —Mitchell	" 14
" Building Construction, Elementary Course —Mitchell	4 14
" Elementary Trigonometry —Loney	3 1
" Elementary Mensuration —Pierpoint, Parts I and II	3 14
" Elements of Statics and Dynamics	6 8
" Roorkee Treatise on Surveying —Part I	3 1
" Heat Engines —Low	10 0
" Class Book of Physics —Gregory and Hadley, Parts III, IV and V (1 volume) Parts VI VII and VIII (1 volume) at Rs 2 each . . .	4 0
" Logarithmic Tables "—College Manual	1
Total	46 8

List of essential text books—(concluded)

Particulars	Cost Rs	a.
Overseer Class—II Year		
" Building Mechanics '—Sheppard	5	8
" Military Eng neering (Volume V) Roads, 1935 "	5	0
' Roorkee Treatise on Railways "	5	1
Roorkee Treatise on Bridges	7	0
Roorkee Treatise on Irrigation —Volume I	4	6
" Sewers and Sewerage —Whyatt	1	12
' U P Irrigation Technical Paper no 1 (Design of Channels) —G Lacey	0	14
' Roorkee Treatise on Estimating	6	9
" Elementary Hydraulics for Technical students '—F C Lea	4	14
Elements of Reinforced Concrete" by Adams	5	0
Total	46	0

Notes for the guidance of candidates when filling in application forms for Entrance Examination for classes in the Thomason College.

General

IMPORTANCE.

It is impressed upon candidates that failure to observe these instructions implicitly must result in prolonged correspondence and possibly the rejection of the application All forms when sent to this College should be pinned together All forms must be kept clean

NAME OF CANDIDATE.

The full name of the candidate *and not initials* must be shown on all papers, and it is important to note that only the name as entered in the educational certificate must be used Spelling of name should be the same in all the forms as are in the educational certificate or, as will appear in the gazette in case of provisional candidates No additions to or omissions from that name will be permitted In the case of Europeans or Anglo Indians the production of a birth or baptismal certificate in support of additional Christian or surname will not be recognized

DATE OF BIRTH.

The date of birth as entered in the application forms must be same as that entered in the educational certificate which must be certified The production of a birth certificate or horoscope will not be accepted as proof for any change from the date given in educational certificate

GENERAL

Separate forms should be filled in for each Examination, i e for Civil Engineer Overseer or Draftsman classes

Particular.

MORAL CHARACTER CERTIFICATE.

It should generally be signed by the Head Master or the Principal of the institution in which the candidate has studied, failing this by a gazetted officer other than the relation of the candidate The words 'last two years" should be crossed out only when the candidate has been in two institutions in which case two separate certificate should be obtained and furnished These should relate to the period he has been in each institution and the period should be stated

EDUCATIONAL CERTIFICATE.

A word to word copy of the Intermediate Examination certificate in case of Civil Engineer class and the High School Examination in the case of the Overseer class candidates verified by a government gazetted officer should be furnished If the candidate has only appeared at the Examination a certificate from the Principal or the Head Master stating that he has appeared at the Intermediate Examination or the High School Examination showing the year and the roll number with which he has appeared should be furnished The result of such examinations should be communicated to the Principal as soon as they are published Full designation of the verifying officer and the date on which he verifies the certificate should be given under his signatures

MEDICAL CERTIFICATE.

It should be signed by a Commissioned Medical Officer belonging to an all India Service or by an officer in charge of a Civil Station (i e Civil Surgeon) A certificate signed by a Medical Officer in charge of a Civil Hospital is not sufficient unless the officer comes within one of the above categories Marks of identification should be caused to be entered by the medical officer granting the certificate

If the eye-sight is defective the Medical Officer granting the certificate should be requested to quote the paragraph noted on reverse

AGE CERTIFICATE.

It should be signed by the officers named in the form. Name of school from the records of which the date of birth has been entered should be given in the place provided for it. Date of birth should be written and not the word "correct" etc

STATEMENT OF AGE, EDUCATION, ETC.

It should be carefully completed In column 3 place of domicile of father or if father deceased that of the guardian should be filled in Particulars of father as required in column 5 should be filled fully If father is deceased full particulars of guardian should be filled in and the fact of the father's death should be stated It should generally be signed by the Head Master or the Principal and place and date to be written in the left hand side One of the certificates at bottom to be crossed out and the other initialled

Where permanent address is required, permanent address should be given and not a temporary one

MADAN GOPAL SARDANA,

ROORKEE RAI BAHADUR,

October , 1943. *Principal*

APPENDICES

Forms required to accompany a candidate's application for admission to the Thomason College, Roorkee, are shown below

(1) Moral certificate

(2) Educational certificate *

(3) Medical certificate

(4) A certificate of the recorded date of birth

(5) Statement showing age, education etc , of candidate

(6) Certificate of Nationality, domicile and residence, when called for

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*Copies verified by a Government gazetted officer will be accepted

FORM No. 1

Moral Certificate required from candidates for admission to the Entrance Examination of Overseer Class of the Thomason College, Roorkee

Certified that————————————bears a good moral character and has done so for the last two years

STATION————— *Signature and designation of Instructor under whom educated, or superior under whom employed or brought up*

Date—————

FORM No 2

Copy of Educational Certificate to accompany application of candidate for admission to the Thomason College, Roorkee.

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Verified

Signature of any Gazetted Officer of Government.

FORM No 3

Medical Certificate to accompany application of candidate for admission to the Thomason College, Roorkee.

I CERTIFY that I have carefully examined———————————————, that his eye-sight is of the standard prescribed,* that he is fairly robust, and his constitution is sound, and that he has no disease, bodily or mental infirmity unfitting him now or likely to unfit him in the future, for active out-door service in the Public Works Department

Marks of identification :

Station——————— *Signature*———————

Dated——————— *Designation*———————

N B —The above certificate must be signed *by a Commissioned Medical Officer or by a Medical Officer in charge of a Civil Station within a month* before date of submission and must include a description giving clearly the personal marks of identification of the Candidate who has been medically examined No other certificate will be acceptd, nor will application be entertained unless the above rules be strictly complied with

*Please quote the no of para if the eye sight of the Candidate according to one of the prescribed paras on reverse

Standard of eye-sight required for admission to the Department of Public Works of India.

1 If myopia in one or both eyes exist, a candidate may be passed, provided the ametropia does not exceed 3 5 D, and if, with correcting glasses not exceeding 3 5 D, the acuteness of vision in one eye equals $\frac{6}{9}$, and in the other $\frac{6}{6}$. there being normal range of accommodation with the glasses

2 Myopic astigmatism does not disqualify a candidate provided the lens or the combined spherical and cylindrical lenses required to correct the error of refraction, does not exceed 3 5 D the acuteness of vision in one eye when corrected being equal to $\frac{6}{9}$ and in the other $\frac{6}{6}$, together with normal range of accommodation with the correcting glasses, there being no evidence of progressive disease in the choroid or retina

3 A Candidate having total hypermetropia not exceeding 4 D is not disqualified provided the sight in one eye (when under the influence of atropine) equals $\frac{6}{9}$, and in the other equals $\frac{6}{6}$, and with + 4 D glasses or any lower power

4 Hypermetropic astigmatism does not disqualify, provided the lens or combined lenses required to cover the error of refraction, do not exceed 4 D, and that the sight of one eye equals $\frac{6}{9}$ and the other $\frac{6}{6}$ with or without such lens or lenses

5 A Candidate having a defect of vision arising from nebula of the cornea is disqualified if the sight of one eye be less than $\frac{6}{12}$ In such a case the better eye must be emmetropic Defects of vision arising from pathological or other changes in the deeper structures of either eye, which are not referred to in these rules, may exclude a Candidate

6 A Candidate is disqualified if he be unable to distinguish the principal colours (achromatopsia)

7 Paralysis of one or more of the exterior muscles of the eyeball disqualifies a Candidate for it

FORM No 4

University, College or School Certificate of age required in case of Candidates for the Entrance Examination of the Thomason College, Roorkee, United Provinces.

Certified that the date of birth of——————————, son of——————————as entered in the records of the——————————(a) { University / College / School }

is——————————

Signature of—

STATION		Registrar————University
Date	(a)	Head Master————School
		Principal————College

(a) Two of these to be struck out

FORM No 6

Statement of age, Education, etc. to accompany application for admission to the ———————— Class of the Thomason College, Roorkee

Name of candidate	Date of birth as furnished to the highest institution of these three— (1) University, (2) College, (3) School	Province of domicile of the father, and if father not living, of guardian where he must have definitely settled and resided for a period of three years	School or College at which educated	Name, profession, situation, residence and caste of father, or *if father not living*, of guardian, showing relationship of latter to candidate	(To be fixed by college)	Remarks

I am willing to be vaccinated on admission

Place————————

Date————————

————————
Signature of candidate

————————
Signature of Head Master or forwarding officer

Permanent address } ————————

Certificate in case of candidates for admission to the Overseer Class

Certified that I have not studied for more than three months in the Civil Eng[illegible]

Certified that I have not appeared for any Entrance Examination of the Thomason College, Roorkee

Since seats are reserved in the Civil Engineer and Overseer classes for United Provinces candidates of the minority communities which include depressed classes also, it would be in the interest of the candidates if they give their castes prominently should they belong to any, noted on reverse of the form.

Signature of candidate

List of castes of the United Provinces included in the "Depressed Classes"

1 Throughout the Province —

Agariya	Hari
Aherya	Hela
Badi	Kanjar
Badhik	Kalabaz
Baheliya	Kharot
Bajaniya	Kharwar (*except* Benbansi)
Bajgi	Khatik
Balahar	Kol
Balmiki	Korwa
Banmanus	Lalbegi
Bansphor	Majhwar
Barwar	Nat
Basor	Pankha
Bajwanya	Parahiya
Beldar	Pasi
Beriya	Patari
Bengali	Rawat
Chamar	Saharya
Chero	Sanaurhiya
Dabgar	Sansiya
Dhangar	Shilpkar
Dhanuk (Bhangi)	Bhantu
Dharkar	Kapariya
Dhobi	Bhuiya
Dom	Karwal
Domar	Tharu
Gharami	Bhuyiar
Ghasiya	Khairaha
Gaul	Turaiha
Habura	Boriya

2 Throughout the Province *except* in the Agra Meerut and Rohilkhand divisions—————————Kori

FORM No 7

CERTIFICATE OF NATIONALITY, DOMICILE AND RESIDENCE

Certified that ——————————————————
who is candidate for the Entrance Examination for admission to the Civil Engineer / Overseer / Draftsman class of the Thomason College of Civil Engineering Roorkee, resides at——————, District ——————and is

(a) a natural born British subject the domicile of origin of whose father is in the United Provinces and who himself is domiciled in the United Provinces,

Or

(b) a natural born British subject the domicile of origin of whose father was not the United Provinces but who or whose father has acquired a domicile in the United Provinces provided that the candidate himself has, after such acquisition, resided in the United Provinces for not less than five years on the date on which he applies for admission to the entrance examination of this College;

Or.

(c) a natural born British subject who was born in the United Provinces and whose father is (or, if dead was at the time of his death) employed in any department of the Central Government and is, or was, liable to inter provincial transfers, provided that he has himself resided in the United Provinces for three continuous years,

immediately preceding the date of application for admission to the entrance examination of this College;

Or

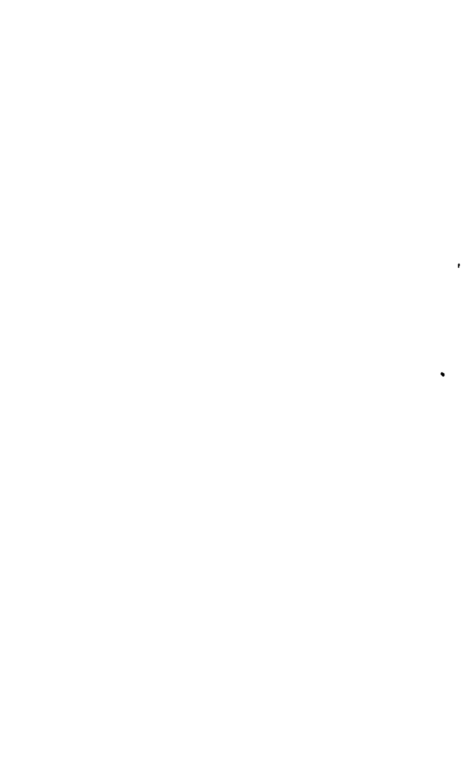
(*d*) A ruler or a subject of the Indian State or a Native of a tribal area or territory adjacent to India, in respect of whom or which a declaration has been made by the Government of the United Provinces under sub section (2) of section 262 of the Government of India Act, 1935.

District Magistrate.

Place—————— ————————*District.*

Dated——————

NOTE —This form should be kept by the candidates carefully and furnished when called for



The rules in this Circular which have been approved by Government in letter No G-XVIII—30(48), dated February 21, 1933, are liable to revision without notice in view of possible changes in the Course of Study, orders of Government, etc.

[CIRCULAR]

THOMASON COLLEGE OF CIVIL ENGINEERING, ROORKEE.

1943

These rules apply to admissions in 1944 and until further notice.

DRAFTSMAN CLASS

1 For admission to the Draftsman Class an entrance examination will be held annually at the Thomason College during the first week of June. Applications for admission must be submitted to the Principal not later than May 1, nor before February 1 preceding. The subjects for the examination will be (1) Arithmetic, (2) English, (3) the preparation of simple drawing scales and italic printing, and (4) Geometry and very simple Mensuration. The maximum marks for each subject are 100. The standard in these subjects (except Drawing) will be that of Vernacular Final Examination with English. The first ten on the list of passed candidates will be selected annually for admission to the Draftsman Class. No entrance fee will be charged for the examination. Indians of pure Asiatic decent,

whose domicile is the United Provinces excluding States within the United Provinces are only eligible for admission to the class One third of the marks in each subject and one-half of the total marks are required for passing

2 Canidates for admission to the Draftsman Class must not be under 15 or above 21 years of age on June 1, immediately preceding the entrance examination in which they wish to appear

3 The minimum qualifying test for permission to appear for the entrance examination *will be High School Examination or the Vernacular Final Examination with English* Candidates must submit a certificate signed by the Head Master of the school in which they have been educated, showing that they possess the minimum educational qualifications and are of good character, industrious and have an aptitude for Drawing

4 All candidates must furnish a certificate of sound health and physical fitness on the prescribed printed form enclosed in the circular No other form will be accepted.

NOTE—The fee prescribed by Government for this examination is Rs 4 which must be paid by the candidate direct to the Civil Surgeon or the Commissioned Medical Officer prior to the examination

Forms of application with instructions showing how they should be filled in may be detached from the circular when required

5 The entrance examination will take place at the same time as the entrance examinations for other classes in the College and accepted candidates should present themselves for the entrance examination on the date which will be notified to them; all are required to be present on that date, otherwise they will forfeit the right of admission. Their admission will depend on the results of the examination and they should

join the class on October 16 or on the date notified to them

6 Full discretion rests with the Principal to remove any student who appears to be unlikely to profit by the training A removal under this rule will imply no reflection on the student's character

7 The College session for the Draftsman Class commences on October 1 each year or thereabouts and ends on July 1 in the following year

8 Candidates will pay no fees and will be provided with free quarters, if available, but no member of a candidate's family will be allowed to reside in them with him

9 No stipends will be given, but not more than twelve scholarships of Rs 4 per mensem are available and shall be awarded to the top four students in each session of the Draftsman Class, who are eligible and are of United Provinces domicile and that if there be any session's class in which the number of United Provinces eligible students is less than four the unawarded scholarships shall lapse to Government No scholarship will be payable while a student is on leave or during the vacation Out of the above *scholarships three are reserved for students from the scheduled* castes one in each year, tenable during the College Session.

10 Instruments and materials will be supplied free for the use of students, but remain the property of the College, and all work turned out during working hours will also be the property of the College

11 On completion of the course of training, students will be granted a certificate as "Draftsman," with "qualified in Simple Estimating," in the case of those students only who attain the requisite standard in the subject The course of training for the Draftsman Class will extend over three years,

but any candidate who gains admission, and, in the opinion of the Principal, is initially a good draftsman, may be allowed to join the second year class. The College does not undertake to find employment for successful students, though it will give all the assistance it can Certificate holders are expected to find employment for themselves in the open market

12 Any student who is expelled from the College for misconduct will not be allowed to appear in any examination conducted by the College.

13. All students have to be in possession of the booklets of Standing Orders and Course of Study A plea of ignorance for the breach of any of the former is not accepted A copy of each of these booklets will be issued to each new student on arrival and the cost recovered in his first bill Students, therefore, should not provide themselves with out-of-date copies.

ROORKEE MADAN GOPAL SARDANA,
October , 1943 *Principal.*

Notes for the guidance of candidates when filling in application forms for Entrance Examination for classes in the Thomason College.

General

IMPORTANCE.

It is impressed upon candidates that failure to observe these instructions implicitly must result in prolonged correspondence and possibly the rejection of the application. All forms when sent to this College should be pinned together. All forms must be kept clean

NAME OF CANDIDATE.

The full name of the candidate *and not initials* must be shown on all papers, and it is important to note that only the name as entered in the educational certificate must be used Spelling of name should be the same in all the forms as are in the educational certificate or as will appear in the gazette in case of provisional candidates No additions to or omissions from that name will be permitted In the case of Europeans or Anglo-Indians the production of a birth or baptismal certificate in support of additional Christian or surname will not be recognized

DATE OF BIRTH.

The date of birth as entered in the application forms must be the same as that entered in the educational certificate which must be certified The production of a birth certificate or horoscope will not be accepted as proof for any change from the date given in educational certificate

GENERAL.

Separate forms should be filled in for each examination i e for Civil Engineer, Overseer or Draftsman classes

Particular.

MORAL CHARACTER CERTIFICATE.

It should generally be signed by the Head Master or the Principal of the institution in which the candidate has studied, failing this by a gazetted officer other than the relation of the candidate The words last two years" should be crossed out only when the candidate has been in two institutions in which case two separate certificates should be obtained and furnished These should relate to the period he has been in each institution and the period should be stated

EDUCATIONAL CERTIFICATE

A word to word copy of the Intermediate Examination certificate in case of Civil Engineer class and the High School Examination in the case of the Overseer class candidates verified by a government gazetted officer should be furnished If the candidate has only appeared at the Examination a certificate from the Principal or the Head Master stating that he has appeared at the Intermediate Examination or the High School Examination showing the year in which he has appeared should be furnished The result of such examinations should be communicated to the Principal as soon as they are published Full designation of the verifying officer and the date on which he verifies the certificate should be given under his signatures

MEDICAL CERTIFICATE

It should be signed by a commissioned medical officer belonging to an all India Service or by an officer in charge of a Civil Station (i e Civil Surgeon) A certificate signed by a medical officer in charge of a Civil Hospital is not sufficient unless the officer comes within one of the above categories Marks of identification should be caused to be entered by the medical officer granting the certificate If the eye sight is

defective the medical officer granting the certificate should be requested to quote the paragraph noted on reverse.

AGE CERTIFICATE.

It should be signed by the officers named in the form. Name of school from the records of which the date of birth has been entered should be given in the place provided for it. Date of birth should be written and not the word "correct" etc.

STATEMENT OF AGE, EDUCATION, ETC.

It should be carefully completed. In column 3 place of domicile of father or if father deceased that of the guardian should be filled in. Particulars of father as required in column 5 should be filled fully. If father is deceased full particulars of guardian should be filled in and the fact of the father's death should be stated. It should generally be signed by the Head Master or the Principal and place and date to be written in the left hand side. One of the certificates at bottom to be crossed out and the other initialled.

Where permanent address is required, permanent address should be given and not a temporary one.

ROORKEE: MADAN GOPAL SARDANA,

RAI BAHADUR,

October , 1943. *Principal.*

APPENDICES

Forms required to accompany a candidate's application for admission are enclosed in the circular and may be detached when required

(1) Certificate of character and education etc (*vide* paragraph 2)

(2) Medical certificate (*vide* paragraph 3)

(3) Age certificate

(4) Statement showing age, education, etc of candidate

(5) Domicile certificate when called for

FORM No 1

Moral Certificate required from candidates for Admission to the Entrance Examination of Draftsman Class of the Thomason College, Roorkee.

Certified that————————————————
bears a good moral character, has passed the High School Examination or Vernacular Final Examination with English, is industrious and has an aptitude for Drawing

STATION———— *Signature of Head Master of S[illegible]*
Date———— *in which educated*

FORM No 2

Medical Certificate to accompany application of candidate for admission to the Thomason College, Roorkee.

I CERTIFY that I have carefully examined—————— ——, that his eye sight is of the standard prescribed* that he is fairly robust, and his constitution is sound, and that he has no disease, bodily or mental infirmity unfitting him now or likely to unfit him in the future, for active out-door service in the Public Works Department

Marks of identification

Station—————— *Signature*——————

Date—————— *Designation*——————

N B —The above certificate must be signed *by a Commissioned Medical Officer or by a Medical Officer in charge of a Civil Station within a month* before date of submission and must include a description giving clearly the personal marks of identification of the Candidate who has been medically examined No other certificate will be accepted nor will application be entertained unless the above rules be strictly complied with

---

*Please quote the no of para if the eye sight of the Candidate is according to one of the prescribed paras on reverse

Standard of eye-sight required for admission to the Department of Public Works of India.

1 If myopia in one or both eyes exist, a Candidate may be passed, provided the ametropia does not exceed 3 5 D, and if, with correcting glasses not exceeding 3 5 D, the acuteness of vision in one eye equals $\frac{6}{9}$, and in the other $\frac{6}{6}$, there being normal range of accommodation with the glasses

2 Myopic astigmatism does not disqualify a Candidate provided the lens or the combined spherical and cylindrical lenses required to correct the error of refraction, does not exceed 3 5 D, the acuteness of vision in one eye, when corrected being equal to $\frac{6}{9}$, and in the other $\frac{6}{6}$ together with normal range of accommodation with the correcting glasses, there being no evidence of progressive disease in the choroid or retina

3 A Candidate having total hypermetropia not exceeding 4 D is not disqualified provided the sight in one eye (when under the influence of atropine) equals $\frac{6}{9}$, and in the other equals $\frac{6}{6}$, and with + 4 D glasses or any lower power

4 Hypermetropic astigmatism does not disqualify, provided the lens or combined lenses required to cover the error of refraction, do not exceed 4 D, and that the sight of one eye equals $\frac{6}{9}$, and the other $\frac{6}{6}$ with or without such lens or lenses

5 A Candidate having a defect of vision arising from nebula of the cornea is disqualified if the sight of one eye be less than $\frac{6}{12}$ In such a case the better eye must be emmetropic Defects of vision arising from pathological or other changes in the deeper structures of either eye, which are not referred to in these rules, may exclude a Candidate.

6 A Candidate is disqualified if he be unable to distinguish the principal colours (achromatopsia).

7 Paralysis of one or more of the exterior muscles the eyeball disqualifies a Candidate for it.

FORM No 3

University, College or School Certificate of age required in case of Candidates for the Entrance Examination of the Thomason College, Roorkee, U. P.

Certified that the date of birth of——————————
son of——————————as entered in the records
of the——————————(a) { University / College / School }
is——————

Signature of—

STATION

Date

(a) { Registrar——————University.
Principal——————College
Head Master——————School. }

(a) Two of these to be struck out

FORM No 4

Since seats are reserved in the Civil Engineer, and Overseer classes for United Provinces candidates of the minority communities which include depressed classes also, it would be in the interest of the candidates if they give their caste prominently should they belong to any, noted on reverse of the form

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Statement of Age Education etc to accompany application for admission to the ———— Class of the Thomason College Roorkee

Name of candidate	Date of birth as furnished to the highest institution of these three— (1) University (2) College (3) School	Province of domicile of the father and if father not living of guardian where he must have definitely settled and resided for a period of three years	School or College at which educated	Name profession situation residence and caste of father or *if father not living* of guardian showing relationship of latter to candidate	Centre	Remarks
					Roorke	

I am willing to be vaccinated on admission

Place————

Date————

Signature of candidate

Signature of Head Master or forwarding Officer

Permanent address } ————

Certificate in case of candidates for admission to the Overseer Class

ree months in the

hich is to be crossed

of the Thomason College Roorkee

Signature of candidate

List of castes of the United Provinces included in the "Depressed Classes"

1. Throughout the Province—

Agariya	Hari
Aherya	Hela
Badi	Kanjar
Badhik	Kharot
Baheliya	Kharwar (*except* Benbansi)
Bajaniya	Khatik
Bajgi	Kol
Balahar	Korwa
Balmiki	Lalbegi
Banmanus	Majhwar
Bansphor	Nat
Barwar	Pankha
Basor	Parahiya
Bawariya	Pasi
Beldar	Patari
Beriya	Rawat
Bengali	Saharya
Chamar	Sanaurhiya
Chero	Sansiya
Dabgar	Shilpkar
Dhangar	Kalabaz
Dhanuk (Bhangi)	Bhantu
Dharkar	Kapariya
Dhobi	Bhuiya
Dom	Karwal
Domar	Tharu
Gharami	Bhuyiar
Ghasiya	Kharaha
Gaul	Turaiha
Habura	Boriya

2 Throughout the Province *except* in the Agra, Meerut and Rohilkhand divisions——————Kori

FORM No 7

CERTIFICATE OF NATIONALITY, DOMICILE AND RESIDENCE

Certified that——————————————————
who is candidate for the Entrance Examination for admission to the $\frac{\text{Civil Engineer}}{\frac{\text{Overseer}}{\text{Draftsman}}}$ class of the Thomason College of Civil Engineering, Roorkee, resides at——————, District ——————and is

(a) a natural born British subject the domicile of origin of whose father is in the United Provinces and who *himself is domiciled in the United Provinces;*

Or

(b) a natural born British subject the domicile of origin of whose father was not the United Province but who or whose father has acquired a domicile in the United Provinces provided that the candidate himself has, after such acquisition, resided in the United Provinces for not less than five years on the date on which he applies for admission to the entrance examination of this College

Or.

(c) a natural born British subject who was born in the United Provinces and whose father is (or, if dead was at the time of his death) employed in any department of the Central Government, and is, or was, liable to inter provincial transfers, provided that he has himself resided in the United Provinces for three continuous years, immediately preceding the date of application

for admission to the entrance examination of this College; or

(*d*) The ruler or a subject of the Indian State or a Native of a tribal area or territory adjacent to India, in respect of whom or which a declaration has been made by the Government of the United Provinces under sub-section (2) of Section 262 of the Government of India Act, 1835.

Place————— *District Magistrate,*

Dated————— —————*District.*

NOTE—This form should be kept by the candidates carefully and furnished when called for

COURSE OF STUDY AND SYLLABUS

CIVIL ENGINEER CLASS, 1942-43.

THE chief points kept in view in arranging this course of study are, to ensure the necessity for steady work throughout the whole course, and to co ordinate the instruction given in each subject so as to lead up to a thorough test of the qualifications necessary for a Civil Engineer of as high a grade as a college training can produce, special attention being paid to the local conditions of India This test is represented by the Project and the Final Examinations

Four-tenths of the total marks at the end of the 1st year are carried forward in each group to the 2nd year Similarly, seven tenths of the total marks at the end of the 2nd year are carried forward to the 3rd year Continuous steady work is necessary to ensure qualification at the end of each year.

TERMS AND EXAMINATIONS.

First Term—

College Attendances—From October 16 to a variable date in February

Mid-Sessional Examinations—For students of all the 3 years start in the last week of January

Second Term—

College Attendances—Start on the Monday following the Mid Sessional Examinations and continue till about the first Saturday in June.

Revision in Quarters—During Entrance Examinations

Final Examinations—Start in the last week of March

The Course of Study extends over three years and comprises the following subjects grouped under seven heads —

Group	I	Mathematics
"	II	General Civil Engineering
"	III	Special Civil Engineering
"	IV	Applied Science
"	V	Mechanical and Electrical Engineering.
"	VI	Projects
"	VII	Physique and General Fitness

The marks each student has to obtain to qualify for admission to the second and third year, and to obtain the College Diploma in Civil Engineering, awarded upon completion of his third year are as follows —

(a) For admission to the second year, the first-year students are required to obtain 33 per cent of the marks allotted to each Sub Group for written examinations and practical work respectively and 50 per cent of the total marks

(b) To return to the College at the end of the second year the students are required to obtain 33 per cent of the marks allotted to each Sub-Group *for written examinations and practical work* respectively in that year (i e in the second year); and 50 per cent of the total marks for the two years, i e of the full marks for the second year together with the reduced marks of the first year.

(c) To pass out of the College at the end of the third year the students are required to obtain 33 per cent of the marks allotted to each Sub Group for written examination and practical work respectively in that year (i e the third year) and 50 per cent of the total marks for the three years i e of the full marks for the third year together with the reduced marks for the first and second years

(d) The Ordinary Diploma is awarded to students who qualify as above and obtain less than 66 per cent of the total marks

The Honours Diploma is awarded to students who qualify as above and obtain 66 per cent or more of the total marks

Students who fail in any year will be allowed to repeat their course provided their stay in the College does not exceed four years on condition that such a student will not be eligible for academic prizes, scholarships or guaranteed appointments

Cases of failures due to prolonged absence through sickness or circumstances beyond the students control will be considered and decided upon their merits

The Examinations and the marks assigned to them are shown on the following pages

NOTE—The course of the Civil Engineer Class has been reduced to two years for the duration of the War A copy of the Scheme for examination and marks for the 2 years courses is also given

Scheme for Examinations and Marks in the two years course for the Civil Engineer Class

Theoretical

(1st term)

		Marks
1	Mathematics	100
2	Mechanics	100
3	Strength of Material	100
4	Building Construction	75
5	Survey	50
6	Communications	100
7	Physics	75
8	Chemistry	75
9	Prime Movers	75
		750

(2nd term)

		Marks
1	Mathematics	100
2	Mechanics	100
3	Strength of Materials and Theory of Structures	100
4	Building Construction	75
5	Drawing	100
6	Hydraulics and Irrigation	150
7	Physics	75
8	Chemistry	75
9	Geology and Mineralogy	75
10	(Prime Movers and Theory of Machines)	75
11	Machine Drawing	50
12	Electrical Engineering	50
		1,025

Practical

1	Mechanics Laboratory	50
2	Levelling and Chain Survey	100
3	Mathematics Tutorial	50
4	Strength of Materials Tutorial	50
		250

1	Mathematics Tutorial	100
2	Theory of structures Tutorial	100
3	Physics Practical	100
4	Chemistry Practical	100
5	Geology and Mineralogy	75
6	Drawing Plates	300
7	Machine Drawing	100
8	Testing Laboratory	50
9	Workshop Practice	50
10	Electrical Engineering Laboratory	50
11	Field Engineering	50
		1,075

Totals

Theoretical Group	750+1,025 =	1,775
Practical Group	250+1,075 =	1,325
	Total for first year	3,100

EXAMINATION AND MARKS

Theoretical

(3rd term)

		Marks
1	Theory of Structures	100
2	Graphics	100
3	Design of Structures	100
4	Reinforced concrete	100
5	Survey	100
6	Hydraulics	100
7.	Irrigation	100
8	Water Supply and Sanitary Engineering	100
9	Communications	100
10	Prime Movers and Theory of Machines	100
11	Electrical Engineering	100
12	Estimating	100
		1 200

(4th term)

		Marks
1	Theory and Design of Structures (Buildings)	100
2	Theory and Design of Structures (Bridges)	100
3	Reinforced Concrete	100
4	Irrigation	100
5	Survey I	100
6	Survey II	100
7	Water Supply and Sanitary Engineering	100
8	Prime Movers	100
9	Mechanics and Machines	100
10	Electrical Engineering	100
		1 000

Practical

(3rd term)

		Marks
1	Survey Camp	250
2	Electrical Engineering Laboratory	100
3	Mechanical Engineering Laboratory	100
4	Civil Engineering Designs (200+100)	300
5	Theory of Structures Tutorial	50
9	Hydraulic Laboratory	50
		850

(4th term)

		Marks
1	Civil Engineering Designs	300
2	Notes on visit to works	50
3	Astronomy and Curves	100
4	Mechanical Engineering Laboratory	50
5	Electrical Engineering Laboratory	[illegible]0
6	Process	50
		600

	Marks
Carried over from 1 year 50%	1,550
Third Term Marks 1200+850	=2 050
Fourth Term Marks 1000+600	=1,600
Project	=1,000
Fitness group	=800
Total	7 000

Aggregate marks { 66% or 4620 marks for Honours Diploma
{ 50% or 3500 marks for Ordinary Diploma

EXAMINATION AND MARKS

According to 3 years course

Theoretical

(1st term)

		Marks
1	Strength of Materials ..	50
2	Mathematics ..	50
3	Mechanics ..	50
4	Building Construction ..	50
5	Physics	75
6	Chemistry	75
7.	Mechanical Engineering (Prime Movers)	50
8	Survey .. .	50
		450

(2nd term)

		Marks
1.	Strength of Materials ..	100
2.	Mathematics ..	75
3	Mechanics	100
4	Graphic Statics ..	50
5	Building Construction ..	100
6	Drawing	100
7	Physics	75
8.	Chemistry . ..	75
9	Mechanical Engineering (Prime Movers and Theory of Machines) ..	100
10	Communications .	100
		875

Practical

1	Mechanics Laboratory .	50
2	Levelling	50
		100

1.	Mechanics Tutorial	50
2.	Physics Practical Examination .	100
3	Chemistry . ..	100
4	Field Engineering ..	50
5	Drawing Plates ..	300
6	Workshops .	150
7	Machine Drawing Plates	50
8	Chain Survey ..	50
		850

Totals

	Marks
Practical	950
Theoretical	1,325
	2,275

EXAMINATION AND MARKS

Theoretical

(3rd term)

		Marks
1	Strength of Materials and Theory of Structures	100
2	Mathematics	75
3	Mechanics	100
4	Hydraulics	100
5	Communications	100
6	Machine Drawing	50
7	Prime Movers	50
8	Theory of Machines	50
9	Electrical Engineering	100
10	Geology and Mineralogy	75
		800

(4th term)

		Marks
1	Mathematics	100
2	Mechanics	100
3	Theory of Structures	100
4	Design of Structures (buildings and bridges)	100
5	Reinforced Concrete	100
6	Irrigation	100
7	Hydraulics	100
8	Estimating	100
9	Survey	100
10	Water Supply and Sanitary Engineering	100
11	Prime Movers and Theory of Machines	100
12	Electrical Engineering	100
		1 200

Practical

1	Survey Camp	250
2	Machine Drawing plates	50
3	Geology Practical Examination	75
4	Electrical Engineering Laboratory	50
5	Testing laboratory (strength of materials to be awarded in the workshops)	50
		475

1	Mathematics Tutorial	50
2	Mechanics Tutorial	50
3	C E Designs (Structures Hydraulics R C and Irrigation)	300
4	Hydraulics Laboratory	50
5	Mechanical Engineering Laboratory	100
6	Electrical Engineering Laboratory	100
		650

Totals

	Marks
First year, carried forward (4/10 of 2275)	910
Second year	3 125
Grand total	4 035

EXAMINATION AND MARKS

Theoretical

(5th term)	Marks	(6th term)	Marks
1. Theory and Design of Structures (Buildings)	100		
2 Theory and Design of Structures (Bridges) .	100		
3 Reinforced Concrete	100		
4 Irrigation .	100		
5. Survey I .	100		
6 Survey II	100		
7. Water Supply and Sanitary Engineering	100		
8 Prime Movers	100		
9 Theory of Machines	100		
10 Electrical Engineering	100		
	1,000		

Practical

	Marks		Marks
1. C E Designs (Structures, Irrigation and Reinforced Concrete)	300	1 Minor Project	300
2 Notes on Visits to works	50	2 Major Project .	700
3 Astronomy and Curves (Practical Examination)	100	3 Games and Sports, U. T. C. .	800
4. Process work	50		
5 Machanical Engineering Labratory	50		
6 Electrical Engineering Labratory .. .	50		
	600		1,800

Totals

	Marks
First and second years' marks (7/10 of 4,035) ..	2,825
Third years' marks	1,600
Projects	1,000
Physique and General Fitness	800
	6,225

APPENDIX B

Statement of hours and marks on 32 hours a week basis

S no	Groups	Sub groups	Subject	Number of hours per week						Total	Number of marks allotted
			Term	I	II	III	IV	V	VI		
			Weeks	13	16	10	16	17	10		
1	Mathematics		Mathematics	3½	2½	2	1		Minor and Major Projects 8 and 7 weeks respectively	121½	350
			Mechanics	5	3	2	2			165	550
			Strength of Materials	1½	2	2	1			87½	250
2	General Civil Engineering	(a) Theory and Design of Structures	Theory of Structures			3	1½	2		88	250
			Design of Structures				6	6		198	450
			Reinforced Concrete				2	4		100	300
		(b) General	Building Construction	2	2½					66	250
			Estimating				1½			39	100
			Survey	4	1	1½	1	2½		186½	800
			Drawing	5	7	6				177	450
3	Special Civil Engineering		Hydraulics			1½	4			79	350
			Irrigation				1½	4		[illegible]	350
			Water Supply and Sanitary Engineering				2	3		83	200
			Communications		2½	2½				65	200

Statement of hours and marks on 32 hours a week basis—(concluded)

S. no	Groups	Sub groups	Subject	Number of hours per week						Total	Number of marks allotted
			Term	I	II	III	IV	V	VI		
			Weeks	13	10	10	10	17	10		
4	Applied Sciences	.	Physics	3½	3				Minor and Major projects 3 and 7 weeks respectively	03½	250
			Chemistry	3½	3½					101½ }	
			Geology and Mineralogy		1	3				48 }	400
5	Mechanical and Electrical Engineering	.	Prime Movers Heat Engines and Theory of Machines	2	2	4	4	4½		238½	700
			Machine Drawing		2	2½		..		57	150
			Electrical Engineering			2	4½	4		100	500
			Workshops	4	2					84	150
				34	34	32	32	30+2 hours Astronomy practical at night		2 328	..
6	Projects ..	..	Civil Engineering Projects.								1,000
7	Physical Fitness	..	..								800

Group I.—MATHEMATICS.

(i) Plane Co-ordinate Geometry.
(ii) Solid Geometry.
(iii) Calculus.
(iv) Differential Equations.
(v) Mechanics.
(vi) Graphics.

MATHEMATICS.

(First Term—3½ hours weekly)

Plane Co-ordinate Geometry.—Equations of straight lines and circles, simple properties of conics, equation of the second degree

Calculus.—Limits, derivatives; standard forms, rules for differentiation, successive differentiation, differentials and small errors, sign of the derivative, mean value theorem; extrema for functions of one variable Integration as inverse of differentiation, standard forms, simpler methods of integration

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(Second Term—2½ hours weekly)

Elementary Solid Geometry.—Simple equations of planes straight lines and spheres, elementary treatment of simple surfaces of revolution

Calculus.—Partial and total differentiation Elementary definite integrals Application of the derivative to plane curves referred to rectangular and polar co-ordinates, intersection of lines and curves; tangents; normals, asymptotes; points of inflections, tracing of simple curves

(Third Term—2 hours weekly)

Calculus—Definite integrals (continued), quadrature and rectification of curves intrinsic equations, volumes and surface areas of solids of revolution Approximate integration, Simpson's rule

Elementary Differential Equations—Formation, equations of the first order and first degree, integrating factors

(Fourth Term—1 hour weekly)

Linear differential equations of the first order, Clairaut's form Linear differential equations with constant co efficients, particular integrals and their determination in simple cases Some simple applications

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MECHANICS

(First Term—5 hours weekly)

Statics—Coplanar forces acting on a rigid body, moment of forces friction, conditions of equilibrium, centres of gravity

Graphical Methods—Triangle and polygon of forces, funicular polygons, stresses in just rigid and pin joined frames

Dynamics—Relative velocities tangential and normal velocities and accelerations, simple harmonic motion

Mechanics Laboratory.—Work in the Mechanics laboratory is an integral part of the course The experiments are designed to illustrate the principles of elementary mechanics to give practice in the use of apparatus and in accurate measurement

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(Second Term—3 hours weekly)

Statics—Work, principle of virtual work, deflections of just rigid and pin jointed frames, displacement diagrams and Mohr's rotation or correction diagrams

Hydrostatics—Static pressure and static head, gauge and absolute pressure, units, total hydrostatic pressure on immersed surfaces; centres of pressure of plane areas, conditions of equilibrium of floating bodies, metacentric heights

Dynamics—Laws of motion, angular momentum; moments of inertia

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(*Third Term—2 hours weekly*)

Dynamics—Equations of motion, principles of energy and momentum, motion along a curve, motion about a fixed axis Impulsive motion

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(*Fourth Term—2 hours weekly*)

Simple problems in forces in three dimensions Lagrangean equations and allied problems

Stability of systems with one degree of freedom, flexible chains Motion in resisting media Vibrations of systems having one degree of freedom including vibrations of beams, whirling of shafts, vibrations due to torsion, etc, etc

Group II.—GENERAL CIVIL ENGINEERING.

(i) Strength of Materials
(ii) Theory of Structures
(iii) Design of Structures
(iv) Theory and Design of Reinforced Concrete.
(v) Building Construction
(vi) Drawing
(vii) Engineering Specifications and Quantities

STRENGTH OF MATERIALS.

(First Term—1½ hours weekly)

Physical properties of the common materials used in Engineering Stress and strain stress—strain diagrams, Young s modulus, complementary shear stress, modulus of rigidity, extension and lateral contraction, Poison's ratio; composite bars, temperature stresses Stresses in cylindrical and spherical shells Resilience Stresses due to suddenly applied loads

---

(Second Term—2 hours weekly)

Principal and combined stresses. Relation between elastic constants Euler-Bernoulli Theory of bending of straight beams Distribution of shear stress in beams Torsion of circular shafts Stress and deflection of close coiled helical springs

Graphical and analytical methods for calculating bending moments and shearing forces due to dead loads in statically determinate beams

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(Third Term—2 hours weekly)

Curvature, slope and deflection of simply supported beams and cantilevers graphical methods and deflection curves, simple theory of struts subject to axial and eccentric loads, empirical strut formulae

Testing Laboratory—Phenomena in tests to destruction in tension compression shear and torsion Leuder lines elastic limit, ultimate strength, ductility Forms of test pieces and devices for holding them influence on strength and percentage extension Testing machines and instruments Methods employed for deducing most probable values of elastic constants from various tests Effect of hardening tempering annealing and over strain hardness and resistance to shock and their measurement, fluctuating and impact stresses fatigue and fatigue tests Theories of strength

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(Fourth Term—1 hour weekly)

Further problems in deflection of simply supported beams and struts combined bending and direct stresses eccentric loads torsion combined with bending

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THEORY OF STRUCTURES.

(Third Term—3 hours weekly)

Bending moments and shearing forces due to travelling loads in beams and plane frames Influence Lines Theory of riveted joints Theory of Earth pressure and foundations stability of masonry and brickwork structures like retaining walls gravity dams and arches

(*Fourth Term*—$1\frac{1}{2}$ *hours weekly*)

Bending moments, shearing forces, curvature, slope and deflection of encastre' and continuous beams Theory of hinged and rigid arches

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(*Fifth Term*—2 *hours weekly*)

Strain energy analysis Theory of suspension bridges Theory of bents, struts with lateral loads and end moments Stresses in thick cylinders Further problems in the Theory and Design of Structures

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DESIGN OF STRUCTURES.

(*Fourth Term*—3 *hours weekly*)

Buildings.—Roof Trusses —Various types of trusses, consideration of loads, wind pressure, Materials and coverings employed Determination of sizes of various members

Foundations.—Methods for finding out the bearing capacity of sou° Trial pits and borings Footings, Grillage foundations

Masonry retaining walls Masonry and steel chimneys. Masonry and steel reservoirs

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(3 *hours weekly*)

Bridges —Preliminary —Selection of site, Calculation of Waterway, Piers, Various types of foundations, depth of scour, Protection works, Floor and curtain walls Various types of Temporary and Permanent Bridges

Superstructures.—Consideration of loads, impact, wind pressure, Masonry bridges and culverts, Plate girder, types of floors

(Fifth Term—5 hours weekly)

Buildings.—Design of a redundant frame Influence line diagrams for, fixed and continuous beams, three pinned parabolic, semi eleptic and segmental arches

Design of a masonry and a R C dome

(3 hours weekly.)

Bridges.—Lattice girder, swing bridges, steel arched bridges, Lateral and sway bracings. Suspension bridges.

THEORY AND DESIGN OF REINFORCED CONCRETE.

(Fourth Term—2 hours weekly)

Nature, uses, properties, advantages and disadvantages of Reinforced Concrete over other types of construction. Theory and design of rectangular and T beams with single reinforcement, simply supported. Shear and diagonal tension; shear reinforcement. Bond Slabs simply supported. Columns, axially loaded.

(Fifth Term—4 hours weekly.)

Doubly reinforced beams continuous beams. Slabs continuous on two and four sides Combined bending and direct stresses

Design of slab and beam floors, columns eccentrically loaded Rigid frames Column footings · combined footings : piles, reinforced concrete pipes, rafts Retaining walls Reservoirs. Investigation of stresses in reinforced concrete arches Reinforced brickwork, design of beams, floors and walls Details of construction of Reinforced Concrete and Reinforced brickwork, centering, shuttering and laying.

BUILDING CONSTRUCTION.

(*First Term—2 hours per week.*)

Materials.—*Stone.*—Classification and varieties Characteristics Suitability for structures. Quarrying, blasting and dressing

Bricks, tiles, firebricks and terra cotta.—Composition of of earth Moulding, drying and burning Characteristics and essential features

Lime and cement.—Methods employed in manufacture. Essential features British standard specifications for cement

Timber.—Growth and structure Felling, converting and seasoning Decay and methods of preservation Common defects Characteristics of timber commonly used in India

Miscellaneous.—Preparation of mortars Mixing, laying and curing concrete Plastering and pointing White and colour washing Other building materials such as asbestos and galvanized iron sheets, slates, lead, copper, brass paints, varnishes, distempers, etc

Masonry.—*Stone masonry.*—Definitions of terms in common use Ashlar, block-in-course and rubble masonry Precautions against settlement Arches

Brickwork.—General principles and precautions Bonds Arches

(*Second Term—2½ hours weekly.*)

Carpentry and Joinery.—Joints and fastenings Beams, wooden floors, partitions, doors, windows, centres and staging

Roofs and Floors.—Timber, steel and flat roofs Roof coverings of tiles, slabs, galvanized iron and asbestos sheets Brick, stone, tiled and concrete floors

Miscellaneous.—Flues and chimneys Stairs and staircases Painting and decorations Fire resisting and sound-

proof construction Heating and cooling of buildings Electrical installations and lifts Lightning conductors

Field Engineering.—Use of spars Knots and lashings Blocks and tackle Holdfasts, guys and winches Use and construction of derricks, gyns and trestles Gantries. Scaffolding shoring, underpinning and centering Ground, tracing Working plans for foundations on level and sloping ground Laying out buildings on the ground

SURVEYING.

(First Term—4 hours weekly)

Levelling.—The use and adjustment of the level Different types of levels Levelling staves, their types and markings Precautions required in levelling, methods of booking and reductions of levels Comparative merits of reduction methods Definitions of terms used in levelling Sources of error Curvature and refraction effects Differential levelling Profile levelling Reciprocal levelling Allowable closing error The Abney level Boning rods

The students will do practical levelling in the fields

(Second Term—1½ hours weekly)

Chain Surveying.—Equipment Ranging and chaining lines Engineer s chain Gunter's chain Customary limits of error Reconnaissance Selection of Stations Keeping up the Field Book Obstacles to chaining and ranging, how over come Offsets Optical square Plotting the Survey.

Compass Survey.—The Prismatic Compass, Constructional details and its uses Bearings and angles Magnetic and True meridian Obtaining meridian by sun's shadow. Variation of the compass Designation of bearings Comparative merits of whole circle and quadrantal reckoning.

Back bearings Local attraction Elimination of effects of local attraction Sources of error Limits of precision Adjustment of closing error

The student will prepare a Chain and Compass Survey plate of a small area

The Theodolite —Various parts their uses and adjustments Measurements of horizontal and vertical angles Repeating angles changing faces Errors in its use and their elimination

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(*Third Term*—8 *hours weekly*)

Theodolite Traversing —Definition of a Traverse Gale s Traverse system Conditions fulfilled in a closed traverse Methods of traversing by inward angles and by bearings Relative merits of these methods Computations for obtaining co ordinates Closing error and its adjustment Bowditch s rule for adjustment Advantages of plotting by co ordinates Precautions in plotting Omitted measurements and their calculations The subtense bar and its use

Plane-Tabling —Equipment for plane tabling Advantages and disadvantages Order of working methods of plane tabling Fixing of position The three point problem The two point problem Traversing with the plane table

Contours and Contouring —Representation of three dimensions Uses of contour plans and maps Contour lines Contour interval Characteristics of contours Methods of contouring Direct method Indirect methods Interpolation of contours

The students will prepare a plate employing the use of theodolite traverse plane table and contours

Minor Triangulation —Grades of triangulation Length of base line Connection of base line to triangulation Selection of stations Reconnaissance Signals and brief descriptions Base line measurements and corrections applied to same Brief description of rigid and flexible base line measuring apparatus as used in Geodetic surveys Observation of angles Zero station Setting to Zero Change of zero Cautions observed in taking a round of angles Recording observations Intersected points Heights Computations Supplementary and satellite stations Completion of Traverse

At the end of the 3rd term students will be taken into camp for three weeks and do a minor triangulation and fill in details with the plane table using the Tangent clinometer for heights and contouring

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(Fourth Term—1 hour weekly)

Curves —Designation of curves Elements of curves Different methods of setting out curves Simple and compound curves Vertical curves Transition curves Double centre method for laying down a straight line Setting out pegs for earthwork Application of curves to highways and railways

Tacheometrical Surveying —Stadia system Principle of Tacheometer Determination of constants Distance and elevation formulae Horizontal sights Inclined sights with staff vertical Internal focussing telescope in Tacheometry. Instrumental constants Tangential system

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(Fifth Term—1½ hours weekly)

Field Astronomy —Introduction The earth as an astronomical body The celestial sphere Definitions Astronomical system of co ordinates Spherical tri

and formulae as required for practical astronomy Napier's rule of circular parts Use of the Nautical Almanac Time. Sidereal, apparent and solar Equation of time Relation between mean and sidereal time Acceleration and retardation Relation between time and longitude. Standard time

Time by ex meridian observations Time by meridian transit Time by equal altitudes of a star Time by altitude of the sun Corrections to observations

Azimuth Azimuth by ex-meridian observations Azimuth by a circumpolar star at elongation Azimuth by Polaris, time and latitude being known Azimuth by observations to sun Convergency correction, how applied

Latitude Determination of latitude by various methods Longitude Determination of longitude by various methods Sun dials Description and use How made

General Engineering Surveys.—Surveying requirements when preparing a project for a building, bridge, road, canal or railway

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DRAWING COURSE

(First Term—5 hours weekly)

Manipulation of Draftsman's instruments Lettering Mouldings Conventional signs Symbols and colours Colouring Projections Orthographic Isometric and Perspective Intersection of planes Interpenetration of solids Development of surface Drawing of simple details of buildings

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(Second Term—7 hours weekly)

Drawing of building and engineering constructional details Taking measurements of actual buildings and drawing

plans elevations and sections of same Drawing plans elevations Sections to $\frac{1}{8}$ scale from general specifications and freehand sketches

ENGINEERING SPECIFICATIONS AND QUANTITIES.

(Third Term—1½ hours per week)

Taking off quantities required for engineering structures, abstracting and billing Estimating quantities of earthwork in roads canals etc

(Fourth Term—1½ hours per week)

Plinth area and cubical contents estimates Analysis of rates for common items of construction General and detailed specifications

Contract —The preparation of tenders and the invitation for same Various kinds of contracts and the documents required for each kind Preparation of running bills and final bills measurement books and their use Completion plans

Group III.—SPECIAL CIVIL ENGINEERING.

(i) Hydraulics

(ii) Irrigation

(iii) Water Supply

(iv) Sanitary Engineering

(v) Communications

HYDRAULICS.

(Third Term—1½ hours weekly)

Irrigation.—Various modes of fluid motion Principle of continuity. Velocity of discharge from small orifices Hydraulic head. Co efficients of velocity, contraction and discharge Bernoulli's theorem Venturi meter Pitot tube. Flow through large orifices, free and submerged Flow over rectangular triangular and trapezoidal notches and weirs Velocity of approach Francis formula for weir Cippoletti Weir Broad Crested weir Flow under a variable head.

Viscous and turbulent flow Critical velocity Rate of discharge under viscous flow Laws of fluid friction Coefficient of surface friction Hydraulic gradient Loss of head in pipes due to friction. Secondary losses due to sudden enlargement, sudden contraction and other causes Discharge through mouth pieces Formulae for turbulent flow. Parallel flow through pipes Transmission of power through pipes Nozzles Diameters of pipes for maximum kinetic energy of jets General formula for flow of water in open channels Channel Cross sections of greatest efficiency.

(*Fourth Term—4 hours weekly*)

Irrigation —General theory of flow of water in open channels Uniform and non uniform flow Critical depth Chezy, Bazin, Manning and Kutter formulae Application to design of canals and distributaries Silt transportation formulae and their application to design of regime channels Theory of scour as applied to rivers Flow through syphons Falls free and drowned Notches on falls Water cushions Afflux and back water curves Standing wave and its height Flood absorptive formulae in tanks Overflow Weirs Modules Methods of gauging discharges in channels

Power—Utilization of water as a source of power Hydraulics of power plants from source of delivery to turbine

Water Supply —Darcy Chezy Bazin and Kutter formulae for turbulent flow under working conditions Limiting, mean and critical velocities Distribution of velocities in pipes and relation between diameter and discharge Economical diameter of pipe lines Initiation and stoppage of motion in a pipe Water hammer and surge chambers Losses at bends elbows and tees Time of discharge through long pipe lines, branch mains and multiple supply Flow through bye pass and pipes coupled in parallel Meters, syphons pitometer pumps rams air valves, relief valves, etc Calculation of compensation water Dimensional homogeneity and dynamical similarity

Hydraulic Machines —Pressure of jets on stationary and moving plates Pressure on curved vanes Work done by jets on moving blades Work done by re action of jets Reciprocating, centrifugal and turbine pumps Pellar wheel Inward and outward flow turbines Impulse and re action turbines Description of different types of turbines Determination of vane angles Efficiencies of turbine plant. Governing Rams Mills Hydraulic lifts and brakes

IRRIGATION.

(Fourth Term—1½ hours weekly)

Earthwork —Definitions, stability and properties of soils Measurement and setting out Sections and volumes Drainage Puddling Consolidation Dressing and turfing Lift and Lead

Irrigation —Definition of irrigation Conditions necessitating its introduction Principal Indian crops their seasons and benefits derived from irrigation Depth of water required to ensure maturity

Wells —As a source of irrigation lined and unlined wells Sub soil water reservoirs Duty of wells Tube wells

Canals —Perennial canals Duty of canal water Depths and running days Supplies utilized and lost Silt and its effect on irrigation channels its prevention Kennedy channels Design of channels from Garrett s diagrams Evaporation absorption and perculation Rise in subsoil water level Water logging Lining of canals

Inundation canals general description and their special features Location of off take to avoid silting

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(Fifth Term—4 hours weekly)

Perennial canals —Sources of supply General description of Indian rivers Location and design of headworks in boulder trough and delta stages of a river Description and general design of Headworks Weirs and Undersluices Head regulators Supply Channels Afflux bunds Temporary diversion bunds Various types of permanent weirs Drop shutters Automatic gates Stoney sluice gates

Design and Alignment of Canals —Locating watersheds and aligning canals Falls Bridges Regulators Locks Escapes Roads Distributaries and Minors Outlets

Cross drainage works —Maximum rate of run off from catchments Inlets Superpassages Level Crossings Aqueducts Syphon Reservoirs

River training works —Spurs Groynes Bell bunds Mattresses Aprons

Storage Works —Tanks Total run off from catchments Flank Escapes Outlets sluices Reservoirs for storage of water Earthen dams Theory and design of masonry dams and weirs Dams with discharge sluices Syphon dams Escapes Flood absorptive capacity of reservoirs

WATER SUPPLY.

(*Fourth Term—2 hours per week*)

Water Supply —History and development Sources of supply Standard of purity for public water supplies Quantity supplied *per capita* Intakes Pumping and gravity schemes Water towers Purification Slow and rapid filtration Sterilization Softening Pipes, fittings and appurtenances Distribution of water Detection and prevention of waste Metering Rules for framing water supply schemes

(*Fifth Term—3 hours per week*)

Sanitary Engineering —*Sanitation* —Site and orientation of buildings Damp proof courses Ventilation Air conditioning House drainage Conservancy and water borne systems Sanitary appliances Construction and testing of house drains Pail depots Public latrines and urinals

Prevention of malaria incidental to engineering construction

Sewerage —Separate and combined systems Forms cross sections capacities and inclinations of sewers Construction of sewers Calculation of storm water Storm water overflows Lifts ejectors and pumps for sewage

Manholes and lamp eyes Flushing of sewers Rules for the design of sewerage and drainage systems in India

Sewage disposal —Essentials in the treatment of sewage Selection of site for disposal works Disposal by dilution and land treatment Simple sedimentation chemical precipitation and bacterial tanks Activated sludge process Sludge disposal

Refuse —Collection and disposal of refuse

Specifications —Specifications for the construction of sanitary works

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COMMUNICATIONS

(Second Term—2½ hours per week)

Roads —History and development Alignment Traffic census and cross sections Gradients Curves Subsoils, under drainage soling and formation Earth *kankar* and stone roads Temporary roads Hill roads Collection and tests for materials Dust prevention Bitumen asphalt tar and cement roads Pavements Wear and maintenance of roads Road construction machinery Preparation of road projects Arboriculture

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(Third Term—2½ hours per week)

Railways —History and development Alignment Preliminary investigations Reconnaissance Preliminary and location surveys Grades Cross sections in embankment and cutting Curves The gauge problem Formation ballast sleepers rails joints and fastenings Points and crossings Plate laying Railway bridges Level crossings Tunnels Station requirements and layout Wear of rails Creep of rails Mountain railways Maintenance of the permanent way Rules for preparation of railway projects

Group IV.—APPLIED SCIENCE.

(i) Physics

(ii) Engineering Chemistry

(iii) Mineralogy and Geology

PHYSICS.

(First Term—3½ hours weekly)

Electricity and Magnetism—Potential and capacity, condensors, production and propagation of wireless waves, principles of wireless transmission and reception receiving set Temperature co efficients alloys and their uses, shunts; wheatstone method of measuring resistance, conditions for accuracy and sensitiveness measurement of potential, current and resistance by potentiometer Back E M F, secondary cells, lead and alkaline Electric power and energy, relations between electrical, mechanical and heat units Application of heating effect to arc and incandescent lamps Magnetic lines of forces, electromagnetic relations C G S units Moving coil galvanometer, ammeter and voltmeter Magnetic circuit, magnetization of iron, measurement of permeability, hysteresis Electromagnetic induction coefficient of induction Lenz's and Fleming's laws

Heat.—Scales of temperature, pyrometers, self-recording devices, ready methods of finding expansion coefficients Precaution against expansion in engineering practice, applications of expansion Application of fusion Total heat of steam, moisture in steam and its determination Vapour pressure hypsometer, flash point, storage of volatile liquids Heat insulating material and its testing Ventilation of buildings, draught in chimneys

(*Second Term—3 hours weekly*)

Heat (*continued*) —Radiation and laws of cooling Laws of perfect gas General thermodynamic principles and scale of temperature Calorific value of fuels and its determination

General.—Commercial forms of weighing machines, commercial methods of measuring density, hydrometers Hydraulic press Fortin barometer, aneroid as altimeter Water and Air pumps Pressure gauges

Light.—Photometry parabolic and cylindrical mirrors, totally reflecting prisms, prismatic and cylindrical lenses Chromatic and spherical aberation, methods of minimising these Sextant telescope, microscope eye-pieces, prism binoculars and range finders

Sound.—Reflection and absorption of sound, reverberation, accoustic demands in a room, reverberation time, treatment of accoustically bad rooms

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ENGINEERING CHEMISTRY.

(*First Term—3½ hours weekly*)

Colloids and their properties Phase rule and its application Water, its natural sources, suitability for various purposes pollution and its effects, purification Gypsum plasters Plain and hydraulic limes Cements, i e Normal and H E S Portlands Alluminous cements, etc their composition, preparation and properties, setting and hardening of mortar and cements Clay, effects of impurities, its various products i e porcelain, pottery and bricks, etc Decay of timber methods used in preventing decay

A study of the following metals, i e copper, aluminium lead, zinc, chromium, manganese and their more important compounds Properties and composition of non ferrous alloys, i e white metals, light metals, brass and bronze Iron and

steel their manufacture and properties, effects of impurities, corrosion of iron and steel, steel alloys, cooling curves, metallography Preservation of structural materials

(Second Term—3½ hours weekly.)

Petroleum, its origin, composition, properties and uses, Bitumen and Asphalt. Their composition, properties and uses. Coal, its distillation products and their uses Road tars; their composition, properties and uses Tests of tars and asphalt Paints, Varnishes. Preparation and use of common pigments.

MINERALOGY AND GEOLOGY.

(Second Term—1 hour weekly)

Geology.—Elementary discussion of the geological agents, their influence in effecting geological changes and the records left by them Simple description of the principles of structural geology Sedimentary and igneous rocks Use of fossils

(Third Term—3 hours weekly)

Geology.—Elementary discussion of the general principles of historical geology, including a brief description of the geological record of the history of the earth with a short discussion of the chief characteristics of the following divisions

(1) Archaean
(2) Palaeozoic.
(3) Mesozoic
(4) Tertiary
(5) Post Tertiary

A short description of the stratigraphical geology of India

Mineralogy.—Crystal form and symmetry, division into systems with their principal characteristics, classification based upon (a) chemical composition, (b) physical properties i e specific gravity, hardness, cleavage, fracture and phenomena relating to light Simple description and identification of rock forming minerals, ores, vein-stones salts and gems

Group V.—MECHANICAL AND ELECTRICAL ENGINEERING.

(i) Prime Movers

(ii) Theory of Machines

(iii) Machine Drawing

(iv) Workshops

(v) Electrical Technology

MECHANICAL ENGINEERING (PRIME MOVERS)

(First Term—2 hours weekly)

Elementary treatment of the production and properties of metals

Boilers —Shell, Firetube and Watertube types Boiler fittings

Boiler accessories Steam pipe lines

Steam Engine —Simple slide valve engine engine details High speed engines, Indicators and Indicator diagrams con densing Engines, Superheating, Steam Jacketting, Com pounding

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(Second Term—1 hour weekly)

Internal combustion Engines —Four stroke, Two stroke, Oil Engines, Petrol engines, Diesel engines

Steam Turbines —De Laval, Parsons, Curtis

Machine Tools —Lathes, Planning machines, Drilling machines Milling Machines, Universal Grinders Special Tools

(*Third Term—2 hours weekly*)

Thermodynamics—Ideal cycles, Entropy; Entropy-diagrams; Compressors

Steam Engine—Theory, Compounding, Combustion, Heat Transmission, Mollier diagrams, Superheating, Steam Jacketting Testing

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(*Fourth Term—2 hours weekly*)

Internal combustion Engines—Principles of working; Effect of compression, Strength of mixture, Ignition, Fuels and their calorific value Testing of engines

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(*Fifth Term—2 hours weekly*)

Steam Turbines—Flow of steam, Impact of steam, Classification of steam turbines, Determination of vane angles steam consumption, Effect of vacuum, superheat and initial pressure Balancing of end thurst, Bleeding Testing of turbines

Refrigerating machinery Principles of working, choice of working substance comparison of results of different machines

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(1½ hours weekly)

Laboratory Practice.—

MECHANICAL ENGINEERING (THEORY OF MACHINES.)

(*Second Term—1 hour weekly*)

Kinematics of machines—Kinematic chains and their inversion, Analysis of motion Angular Reciprocating and straight line motions, Toothed gearing, Trains of wheels and epicyclic gears, Belts and belting Rope and chain drives, Cams

(*Third Term—2 hours weekly*)

Dynamics of machines—Friction and lubrication; Static equilibrium of machines, Turning moment diagrams; Fly-wheels, Governors

(*Fourth Term—2 hours weekly*)

Balancing of machines, Brakes and Dynamometers

(*Fifth Term—1 hour weekly*)

Hydraulic machines

($1\frac{1}{2}$ *hours weekly.*)

Laboratory Practice.

MACHINE DRAWING.

(*Second Term—2 hours weekly*)

Fastenings applied to structures Design of bearings Working drawings for a crane jib Hydraulic pipe lines, pipe joints and specials

(*Third Term—$2\frac{1}{2}$ hours weekly*)

Complete working drawings for (*a*) Canal Sluice Gate; (*b*) Travelling gantry Drawing from measurement of a complete 5 H P engine.

MECHANICAL ENGINEERING.

(*First Term—4 hours weekly.*)

Workshops.—Practical work in Carpenter's, Blacksmith's and Moulding Shops

(Second Term—2 hours weekly.)

Workshops.—Parctical work in machine and fitting shops.

ELECTRICAL ENGINEERING.

(Third Term—2 hours weekly)

Electrical Technological.—*The magnetic circuits.*—General consideration; Magnetic leakage, Circuits in parallel; *Cycles of Magnetism; B-H Curves*

Electromotive force.—Production; Induced E M F.; Statically and self-induced E M.F , Co-efficients of self and mutual induction; Rise and decay of current

Construction of D C. Machines —Windings, Commutation; E.M.F , equation Armature reaction; Interpoles; Compensating windings Characteristics of D. C. Generators

Direct Current Motors —Back E M F , , speed; Characteristics, Series, Shunt and Compound Motors; Speed control, Series and parallel working.

(Fourth Term—4 hours weekly)

Alternating Current —Principles, Effective value, Induction, reactions and capacity; Polyphase currents; Alternators; Voltage regulation and parallel working, the induction motor; Converting machinery.

Transformers.—Single phase ; Construction Theory ; Use Cooling; Auto-transformers, Parallel working Single phase commutator motors; Complex wave forms Phase advancing; Electric furnaces, Electric welding

Rectifiers.—Mercury and Valve

Power House equipment

(Fifth Term—4½ hours weekly)

Transmission and distribution of electrical energy—Supply system, Distributors, Insulation resistance, Feeders, Line constants Lines, Insulators, Mechanical Characteristics, Cables Voltage control, Circuit breakers, Feeder protection, Travelling waves, Protection against overvoltages

Group VI.—PROJECTS.

The projects will consist of the preparation of detailed designs and estimates for various engineering schemes There will be one minor project, which will be examined by internal examiners and a major project which will be set and examined by an outside examiner The maximum marks allotted to the minor project are 300 and to the major 700 making a total of 1,000 in this Group

Group VII. PHYSIQUE AND GENERAL FITNESS.

General Fitness includes discipline, punctuality, general conduct and ability to control labour, etc., throughout the three years' course. Over 10 per cent of the total marks for the whole three years' course are allotted to this group and *the total marks therefore constitute a very fair and true record* of the student's intellectual and physical fitness for the work of an Engineer

The sub-heads and the marks allotted are :—

	I year	II year	III year	Total
Military Proficiency :—				
Physical Training .	*75*	*75*	..	*150*
A. F. I and U. T C		..	100	100
Games and Sports ..	70	75	175	320
Swimming	..	..	30	30
General Fitness .	..	..	200	200
Total .	145	150	505	800

COURSE OF STUDY AND SYLLABUS

OVERSEER CLASS

1941 42 *and till further notice*

The chief points kept in view in arranging this Course of Study are to ensure the necessity for steady work throughout the whole course and to co ordinate the instruction given in each subject so as to lead up to a thorough test of the qualifications necessary for an overseer in the Public Works Department of as high a grade as a College training can produce special attention being paid to the local conditions of India This test is represented by the Project and the Final Examinations Of the marks obtained in the first year 50 per cent are carried on to the second year so that continuous steady work is necessary for ultimate success

Terms and Examinations

FIRST TERM—

College Attendances —From October 1 to a variable date in January

Mid Sessional Examinations —For both the 1st and 2nd year students start in the last week of January

SECOND TERM—

College Attendances —Start on the Monday following the Mid Sessional Examinations and continue till about the first Saturday in June

Revision in Quarters —During Entrance Examinations

Final Examinations —Start in the last week of

The Course of Study extends over two years, and comprises the following subjects grouped under seven heads —

Group I—Civil Engineering including Process work
,, II—Mathematics and Physical Science
,, III—Surveying
,, IV—Drawing
,, V—Mechanical and Electrical Engineering
,, VI—Project and design
,, VII—General Fitness

The marks required at the end of the second year for certificates are as follows

I—To obtain the Higher Certificate as Overseer the minimum pass marks of 45 per cent in each group and 60 per cent in the total must be obtained

II —To obtain an ordinary certificate (required for all overseers) the minimum pass marks of 33 per cent in each group and 45 per cent in the total must be obtained

For admission to the 2nd year a student has to obtain at least 33 per cent of the marks allotted to each group and 45 per cent of the grand total

A student who fails to attain the standard prescribed in any of the two years' course will be given one more chance to repeat his studies at the College in the same class provided his stay at the College does not exceed three years Such a student will not be eligible to compete for the United Provinces Government scholarships or academic prizes

Should the failure be, however, due to prolonged absence through sickness or other circumstances beyond the student's control, such cases will be considered and decided upon their merits

The examinations and the marks assigned to them are shown on the following pages

GROUPING

First Year

1 Civil Engineering
2 Mathematics and Physical Science
3 Surveying
4 Drawing
5 Mechanical Engineering

Students will be required to obtain 33 per cent in each group and 45 per cent in the aggregate

Fifty per cent of the aggregate marks in each group will be carried over to the second year

Second Year

1 Civil Engineering (Process work included)
2 Mathematics
3 Surveying
4 Drawing
5 Mechanical and Electrical Engineering
6 Project and design
7 General Fitness

Fitness for department	150
Physical training	100
Games and Sports	150

Students will obtain 33 per cent in each group and 45 per cent of the total for ordinary certificate

For Higher certificate 45 per cent in each group and *60 per cent in the total*

LIST OF HOURS ALLOTTED TO EACH SUBJECT [illegible] THE OVERSEER CLASS

First Year

First term	Hours	*Second term*	H[illegible]
Building materials	3	Building construction	
Roads	2	Earthwork	
Building construction including Carpentry	3	Fi ld Engineering	
Survey	4	Survey	
Drawing	6	Drawing	
Mechanical Engineering	1	Mechanical Engineering	
Workshop Practice (+ 2 alternate per week)	4	Workshop Practice (+ 2 alternate periods)	
Physics	3	Physics	
Mathematics	8	Mathematics	
	34		

Second year

Bridges	2	Bridges and Building designs	
Irrigat on	1	Irrigation and Designs	
Estimating	-	Sanitary Engineering and Water Supply	
Water Supply	2	Reinforced Concrete	
Building construction	1	Estimating	
Survey	12	Railways	
Drawing	4	Survey	
Mechanical Engineering	1	Mechanical Engineering	
Workshop Practice	2	Workshop	
Electrical Engineering	1	Drawing	
Mathematics	6	Mathematics	
		Electrical Engineering	
	34		[illegible]

First year

THEORETICAL.

First Half Session		Second Half Session	
1 Building materials	100	1 Building construction I	50
2 Roads (2 hours paper)	50	2 Building construction II	100
3 Building construction including Carpentry	100	3 Earthwork (2 hours paper)	50
4 Survey (2 hours paper)	50	4 Survey	50
5 Trigonometry and Algebra	100	5 Drawing	50
6 Mensuration and Geometry	100	6 Mechanical Engineering	100
7. Mechanics	100	7 Physics	100
8 Mechanical Engineering	50	8 Elementary Mathematics	100
		9 Mechanics and Hydrostatics	100
	650	10 Applied Mechanics	100
			800

PRACTICAL

First Half Session		Second Half Session	
1 Levelling	100	1 Field Engineering	50
2. Civil Engineering Tutorial	50	2 Chain and Compass Survey	100
		3 Mathematics and Mechanics Tutorial	100
		4 Drawing Plates	200
		5 Workshops	100
		6 Civil Engineering Tutorial	50
	800		600
			1 400
		GRAND TOTAL	2 200

Second Year.

THEORETICAL.

First term		*Second term.*	
1. Bridges and Building construction	100	1. Building Construction and Reinforced Concrete	100
2. General Civil Engineering (Irrigation and Water Supply)	100	2. Railways and Bridges ..	100
3. Estimating	100	3. Public Health Engineering	100
4. Survey	100	4. Irrigation	100
5. Mechanical Engineering	50	5. Estimating	100
6. Electrical Engineering (2 hours paper) .	50	6. Survey . ..	100
7. Applied Mechanics .	100	7. Drawing . ..	50
8. Hydraulics and Hydrostatics . ..	100	8. Applied Mechanics ..	100
		9. Mechanical Engineering	100
		10. Electrical Engineering ..	100
	700		950

PRACTICAL

1. Survey . .	200	1 Notes on works ..	50
2. Process work ..	50	2. Civil Engineering designs	150
	250	3 Drawing plates ..	100
		4 Applied Mechanics Tutorial ..	100
		5 Workshops . ..	50
		6 Projects	300
		7 General Fitness ..	400
	950		1,150

Carried over from first year .. .	1,100
Second year marks	3,050
	4,150

Group I.—CIVIL ENGINEERING.

BUILDING MATERIALS.

(*1st year, 1st term, 3 hours a week*)

Stone.—Classifications and varieties Characteristics. Suitability for structures Quarrying, blasting and dressing.

Bricks, tiles, fire-bricks and terra-cotta.—Composition of earth Moulding, drying and burning Characteristics and essential features

Lime and Cement.—Method employed in manufacture Essential features British standard specifications for cement

Timber—Growth and structure Felling, converting and seasoning Decay and methods of preservation Common defects Characteristics of timber commonly used in India

Metals.—Characteristics and properties of cast iron, wrought iron, steel, lead, copper, brass zinc and tin

Miscellaneous.—Preparation of mortars Mixing, laying and curing concrete Plastering and pointing White and Colour washing Other building materials such as asbestos and galvanized iron sheets, slates paints varnishes, distempers Bitumen Asphalt etc

ROADS.

(*1st year, 1st term 2 hours a week*)

History and development Alignment Traffic census and cross sections Gradients Curves Subsoils under-drainage, soling and formation Earth kankar and stone roads Temporary roads Hill roads Bridle paths Col-

lection and tests for materials Dust prevention Bitumen, asphalt, tar and cement roads Pavements Wear and maintenance of roads Drainage crossings Arboriculture. Preparation of road projects

BUILDING CONSTRUCTION

(1st *year*, 1st *term*, 3 *hours a week*)

Brickwork —Technical terms Bonds Hollow walls Prevention of damp Arches Sills Lintels Bonding of new and old work Plastering and pointing.

Stone Masonry.—Different types of stone masonry—Ashlar Block in course and rubble Dressing stones Joints. Stone *Lintels* *Arched* lintels *Marble* linings *Hoisting* apparatus Corbel, jamb, sill and coping Raking back

Carpentry.—Various types of joints and fastenings Points observed in designing joints Wooden floors, partitions, roofs staircases centres staging shoring and under pinning Joinery Special precautions necessary in selecting timber for joinery work Points observed in designing joints Different types of joints Doors and windows

(1st *year*, 2nd *term*, 4 *hours a week*)

Foundations.—*Benching out Foundations in black* cotton soil Fire places, flues, chimney stacks Precaution against settlement Columns stanchions and girders with details of construction Various types of flat and pent roofs, their details of construction and drainage Floors ceilings, partitions, staircases Selection of site for a building, orientation of buildings, arrangement of rooms and accommodation allowed Ventilation in a building

(2nd *year*, 1st *and* 2nd *terms*, 2 *hours a week*

Design of a steel structure (a roof truss or a water tank) and a small building with calculations for foundations, pillars, lintels, R. S Joists, tie rods, rafters, purlins, battens, etc.

EARTHWORK

(1st year, 2nd term, 2 hours a week)

Definition of technical terms Contracts Stability of different soils, angle of repose Properties of various kinds of earths, preservation of materials obtained in excavations Measurements Setting out Tools and implements used Cuttings, economical depth, methods of raising earth from a deep cutting Embankments, settlement allowance, methods of consolidation, slope protection, drainage Puddle—dry and wet. Puddling Alignment of distributaries, borrow pits, spoil banks Profiles, bed bars Temporary and permanent land Repairs Specifications Earthwork of hill roads

FIELD ENGINEERING

(1st year, 2nd term 2 hours a week)

Use of Spars.—Various knots and lashings and the suitability of each to certain circumstances Coiling and handling of ropes Blocks and tackle Reeving of blocks Use of handspikes and rollers Hold-fasts Guys Use and construction of derricks, shears gyns, and trestles in placing girders or columns in position in buildings etc

Ground Tracing—General principles Working plans for foundations on level ground and on slopes Trenches with vertical and with sloping sides Laying out buildings on the ground and similar practical instruction

IRRIGATION

(2nd year, 1st term one hour a week)

Definition of irrigation Classifications Natural artificial lift flow perennial inundation Principal Indian crops, their crop seasons depths of water required for ... crops

Well Irrigation.—Sources of supply, subsoil water reservoirs, mota, drainage cones, classes of wells Methods of raising water from wells Duty of a well Cavity and strainer type of tube-wells, various types of strainers, critical velocity and depression head

Channels.—Canal, Distributary (major and minor) Duty, *Water depth and running days* Evaporation, absorption and percolation Supplies utilized and lost Safe and critical velocities, Kennedy's Channels, design of channels from Garret s diagrams design of channels from Lacey's tables Rise in subsoil water level, water logging Lining channels Discharge of outlets

Students will design a channel from the data supplied

(2nd year, 2nd term, 5 hours a week)

Works.—Distributary heads Regulators, discharge sites Falls Syphon Rapids Bed Bars Escapes Drainage works Silt tanks

Head Works.—Brief description of head works, main weirs, afflux, classes of weirs, causes of failure of weirs. description of foundation of weirs Barrage Drop and lift shutters Under sluices Object and description of groynes below weirs Talus below weirs Afflux embankments Canal head Regulators Temporary bunds Scouring sluices

Torrent Works—Brief description of aqueduct, level crossing, superpassage, syphon, inlet, drainage diversion.

Reservoir Irrigation.—Capacity, duty, embankments. dams, spill weirs Drainage of dams Saddle escapes Breaching sections

Training Works.—Types and their object Straightening· channels Temporary training works Methods of directing current.

The students will design a small fall and a syphon

WATER SUPPLY.

(2nd year, 1st term 2 hours a week)

(2nd term, 2 hours a week)

Sources of Supply—Rivers, lakes, springs and wells Types of wells shallow and deep wells Tube wells Driving tube wells in soft soil Varieties of tube wells Tests for yield of tube wells Purity at source Sampling of water for analysis

Pumping arrangements—Intakes and unfiltered water pumping stations Filtered water stations Tests Rising mains

Storage—Reservoirs and tanks

Purification—Mineral and organic impurities Hard and soft water Settling tanks Coagulation tanks and filters—slow sand and mechanical Chlorination and chloramination Clear water reservoirs

Distribution—Intermittent and continuous systems Service reservoirs Distribution pipes Pipe fittings House connections Alignment of mains Pipe joints Quantity supplied per capita Method of calculating sizes of pipes *Loss of head in pipes Meters—Positive* and Inferential Waste detection and prevention

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SANITARY ENGINEERING

(2nd year 2nd term 2 hours a week)

Systems of collection and removal of refuse—Conservancy and hand removal and sewerage systems Refuse destructors

Sewers and underground drains—Separate and combined systems Alignment of sewers and their sections Fall and velocity *Flushing Catch pits gullies manholes* Ventilating of sewers Clearing of obstructions Storm overflows Testing of sewers

Surface drains —Alignment and their sections Provision for rain water Flushing and cleaning Junctions Road crossings

Sanitary Fittings —Sanitary appliances Construction and testing of house drains Pail depots Public latrines and Urinals

Sewage Purification and disposal —Screening chamber Detritus tank Sedimentation tank Chemical precipitation tanks Biological treatment Land irrigation Contact beds Percolating filters Bio aeration treatment Simplex process Septic tank treatment Selection of site for out fall

BRIDGES

(2nd year 1st term 2 hours a week
2nd term 2 hours a week)

Selection of site Calculation of water way Discharge from catchment area and afflux Different types of temporary and permanent bridges Different types of steel bridges Plate girder bridge End bearings Foundation on dry ground in soil charged with water and under water Piers Abutments and wing walls Depth and width of foundations Roadway River training Piles and pile driving Sheet piles Coffer dams Sinking of wells Design of a small culvert Design of a small plate girder

RAILWAYS

(2nd year 2nd term 2 hours a week)

History and development Alignment Grades Cross *sections in embankment and cutting Curves The gauge* problem Formation Ballast Sleepers Rails Joints and fastenings Elementary treatment of points and Crossings Plate laying Superelevation Road Crossings

Tunnels Station requirements Wear of Rails Creep of Rails Maintenance of permanent way

REINFORCED CONCRETE

(2nd year, 2nd half session, 3 hours a week)

Proportion of cement sand ballast and water Water cement ratio Calculations with details of design of simple slab Two way reinforced slab Simple beam Doubly reinforced beam T Beam Short columns and R C Pipes Reinforcement in fixed and continuous beams Reinforced brickwork slabs and lintels Shuttering and centering Design of a reinforced concrete T Beam floor Design of a R C Culvert

PROCESS WORK

(1st year 2nd term)

Students will be shown the details of both the Ferrogalic and Ferro prussiate processes and will be expected to make prints from their own tracings on paper sensitised commercially and on paper which they will themselves sensitise Each student will submit three copies of prints on each kind of paper in both processes

ESTIMATING.

(2nd year 1st term 2 hours a week
2nd term 2 hours a week)

Taking off quantities required for engineering structures abstracting and billing Estimating quantities of earthwork in roads, canals etc

Plinth area and cubical contents estimates Analysis of rates for common items of construction General and detailed specifications Preparation of contracts

Group II.—PURE AND APPLIED MATHEMATICS AND PHYSICAL SCIENCE.

ELEMENTARY MATHEMATICS.

(*1st year, 1st term*)

Geometry.—Students will be expected to become familiar with the subject matter of Hall and Stevens Schools Geometry, Parts I to V Students will also be expected to solve simple riders and to apply the propositions practically in the solution of easy graphical problems requiring geometrical drawing

Mensuration.—Surface and volumes of cones, frusta of cones spheres, zones of spheres, pyramids, prisms, cylinders and wedges

Trigonometry.—Angles and their measurements Trigonometrical ratios The relation between the ratios of complementary and supplementary angles, and of multiple and sub multiple angles

(*1st year, 2nd term*)

Trigonometry.—Simple identities and equations Solution of triangles including problems relating to heights and distances and those requiring the use of logarithms

ELEMENTARY MECHANICS.

(*1st year 1st term*)

Velocity and acceleration Relative velocity Absolute-unit of force Simple examples on rectilinear motion including the principles of energy and momentum Conception of force Elementary laws relating to concurrent forces Parallelogram and triangle of forces Lami's

theorem Parallel forces Funicular polygons Moments Friction Simple cases of equilibrium.

(*1st year, 2nd term*)

Centre of gravity Principle of work Simple machines, namely lever, screw, pulleys, wheel and differential pulleys, velocity ratio, mechanical advantage and efficiency

APPLIED MECHANICS.

(*1st year, 2nd term*)

Determination of stresses in roof frames including the effect of wind pressure Bending Moment and Shear Force diagrams for cantilevers and simply supported beams Hooke's Law, stress and strain Resilience

(*2nd year, 1st term*)

Stress analysis Principal stresses Conjugate stresses Uniformly varying stress Application of Rankine and Gordon s formulae for struts Moment of resistance and strength of beams Design of wooden and steel beams Stiffness of beams and calculation from deflection formula for simple cantilever and beams under (1) a distributed load and (2) a single concentrated load

(*2nd year 2nd term*)

Stability of masonry structure Testing of retaining walls and masonry arches

HYDROSTATICS.

(*1st year, 2nd term*)

Fluid pressure at a point in a mass of liquid at rest and on a plane surface partly or wholly immersed Intensity of pressure and whole pressure Centre of pressure in simple Elementary cases

HYDRAULICS

(2nd year, 1st term)

Bernoulli s theorem Discharge, through orifices and mouth pieces and over notches and weirs Laws of Fluid friction Discharge through pipes, sewers, channels

PHYSICAL SCIENCE

(1st year)

The subject is an elementary one and is taken up with special reference to the Engineering subjects The elementary physical principles taught are illustrated by numerical examples in tutorial work and the measurement of principal quantities involved is carried out in the physical laboratory *by students in a simple manner*

General Measurement —Fundamental units in C G S and F P S systems Mass density and specific gravity Buoyancy Determination of specific gravity by simple methods Atmospheric pressure and Boyle s Law Fortin and aneroid barometers syphon pressure gauges and water pumps

Heat —Mercury thermometer and its graduation Expansion of solids liquids and gases with simple applications Charles Law Units of heat specific heat its measurement by the method of mixtures measurement of specific heat of liquid by the method of cooling Laws of fusion and ebullition melting and boiling points latent heat evaporation Transfer of heat by conduction convection and radiation with simple applications of these methods Heat and work mechanical equivalent of heat Calorific value of coal Thompson's fuel calorimeter

Light —Rectilinear propagation of light and shadows Units of illumination and illuminatory power Photometers

Laws of reflection and refraction, mirrors and lenses Elementary Electricity and Magnetism

Magnetism.—Properties of magnets and magnetic needles, magnetic poles and fields, magnetic induction, law of inverse squares, terrestrial magnetism with reference to dip, intensity, and variation

Electricity—Voltaic cells Daniell cells, Leclanchis cells Bunsen cells Dry cells Accumulators

Oersted's experiment Ampere's rule Magnetic field due to a current in a straight wire and in a circular wire Electric telegraph, electric bell The principle of electro magnetic induction

Heating, lighting and chemical effects

Ideas about unit current voltage power and energy, Ohm's law Simple grouping of cells and resistances

Ammeters, voltmeters, wattmeters, tangent galvano meters

The course of experimental work in the Science Laboratory should take the student over a range of experiments covering, as far as possible the syllabus in Science

Group III.—SURVEYING

(1st year, 1st term, 4 hours a week)

The Level.—The use and adjustment of the level. Different types of levels and their constructional details Different types of levelling staves and their markings Their relative merits Precautions in using levels Level field books of different kinds Booking and reduction of levels Comparative merits of reduction methods Definition of terms used in levelling Sources of error Curvature and refraction Longitudinal sections and their plotting. Allowable closing error

(1st year, 2nd term, 4 hours a week)

Chain Surveying.—Equipment Ranging and chaining lines Error in chaining Customary limits of error. Reconnaissance Selection of stations Keeping of the field book Obstacles which obstruct chaining but not ranging Obstacles which obstruct ranging but not chaining Obstacles which obstruct ranging and chaining Plotting the survey

Compass Surveying—The Prismatic Compass, constructional details and its uses Bearings and angles Magnetic and true meridian Variations Designation of bearings Comparative merits of whole circle and quadrantal reckoning. Back bearings Application of compass surveying Local attraction Elimination of its effects Sources of error Limits of precision Adjustment of closing error

The students will carry out and prepare one combined plate of chain and compass survey

(2nd year, 1st term, 12 hours a week)

The Theodolite.—The use and adjustments of the theodolite Parts of horizontal measurement Parts for

vertical measurement Details of the Theodolite Measurement of angles Repeating angles Requirements of the Theodolite Conditions established by adjustment Errors in non adjustable parts Elimination of these errors

Traversing and its computations —Definition of a traverse Gale s traverse system Conditions fulfilled in a closed traverse Calculation and tabulation of co ordinates Closing error and its adjustment Advantage of plotting by co ordinates Omitted measurements and their calculations

Plane-tabling —Equipment Advantages and dis advantages of plane tabling Maxims for plane tabling Order of working Methods of plane tabling Fixing of position Traversing with the plane table Engineering contouring

The students will carry out a theodolite traverse and plane table triangulation survey and detail filling with plane table together with contouring

(*2nd year 2nd term 2 hours a week*)

Curves and Alignments —Des gnation of curves Ele ments of curves Setting out by means of Theodolite and chain Setting out by means of chords and offsets Methods of calculation when curves start or end with sub chords Tabulation Problems in simple and compound curves Curve of deviation Transition curves Simple method for laying out a transition curve

Engineering Surveying —Surveying requirements when making a project for a building bridge road canal distri butary or railway

Group III.—SURVEYING

(1st year, 1st term, 4 hours a week)

The Level.—The use and adjustment of the l[illegible] Different types of levels and their constructional det[illegible] Different types of levelling staves and their markings T[illegible] relative merits Precautions in using levels Level books of different kinds Booking and reduction of le[illegible] Comparative merits of reduction methods Definition terms used in levelling Sources of error Curvature refraction Longitudinal sections and their plott[illegible] Allowable closing error

(1st year, 2nd term, 4 hours a week)

Chain Surveying.—Equipment Ranging and chai[illegible] lines Error in chaining Customary limits of e[illegible] Reconnaissance Selection of stations Keeping of the book Obstacles which obstruct chaining but not rang[illegible] *Obstacles which obstruct ranging but not chaining* Obst[illegible] which obstruct ranging and chaining Plotting the sur[illegible]

Compass Surveying.—The Prismatic Compass, const[illegible] tional details and its uses Bearings and angles Magr[illegible] and true meridian Variations Designation of bear[illegible] Comparitive merits of whole circle and quadrantal reckon[illegible] Back bearings Application of compass surveying L[illegible] attraction Elimination of its effects Sources of error Lu[illegible] of precision Adjustment of closing error

The students will carry out and prepare one comb[illegible] plate of chain and compass survey

(2nd year, 1st term, 12 hours a week)

The Theodolite.—The use and adjustments of theodolite Parts of horizontal measurement Parts

Group V.—MECHANICAL AND ELECTRICAL ENGINEERING.

WORKSHOPS.

(*1st and 2nd years*)

The object of the course is to familiarize students with the appearance, structure and properties of materials commonly used in engineering and with the tools and processes by which they are shaped

Carpentry.—A series of simple exercises will be provided including the preparation of various types of joints used in wood work

Foundry.—The use and preparation of sand moulds and the explanation of Foundry methods

Students will be provided with simple patterns and cores from which they will prepare moulds and make castings in white metal, etc

Forge.—Use of tools employed in forge work Exercises in drawing down, upsetting, welding etc

Fitting and Machine Shop.—Use of hand tools in bench work Cutting tools and their action Characteristic features of simple machine tools

MECHANICAL ENGINEERING.

(*1st year*)

Fastenings.—Screws, Bolts Nuts their production and uses Rivets and riveted joints standard iron and steel sections

Boilers.—Shell, Water-tube, and Fire-tube Description of the more common types, their erection and inspection

Boiler accessories, description and uses Steam pipe lines Arrangement and Lagging

Steam Engines.—Description of the simplest types, including portable engine Engine foundations Erection.

(2nd year)

Internal Combustion Engines.—Description of oil, petrol and gas engines Foundations Location of starting and running faults

Hydraulic Machinery.—Laying and anchoring of pipe lines Description of turbines Description of common types of reciprocating and centrifugal pumps

Power Transmission.—Elementary treatment of power *transmission by means of belts gearing, ropes chain and* friction drives

Lectures will be illustrated by models, wall diagrams of modern machinery and conducted inspections of examples of the above machinery in the College workshops and laboratories

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ELECTRICAL ENGINEERING.

(2nd year, 1st term 1 hour a week,
2nd term, 2 hours a week)

House Wiring.—Principles laid down by Government in 'Specifications for internal wiring"

D. C. Power Plants.—Lay out of simple D C distribution systems Description and working of simple switchboards Protection devices and knowledge of normal faults in a small power station.

A. C. Power Plants.—*Lay-out of simple A C generating* and distribution systems Description of alternators, induction

motors and transformers. Comparison of A. C. and D. C. distribution system.

The lightning conductor, parts used in and general rules for erection; function of the lightning conductor. Earth *resistance of the conductor and method of measuring it.* Other tests to see that the conductor is in good condition.

The course will not include the theory or manufacture of electrical machinery, but laboratory demonstrations will be given of every principle dealt with in the course.

Group VI.—PROJECT AND CIVIL ENGINEERING DESIGNS

The student will be required to design a number of simple structures under professional instruction and guidance

The course will include the design of small buildings, culverts, simple design of beams, columns and slabs in reinforced concrete Steel trusses, steel stanchions and small Falls for minors and distributaries

Special stress will be laid on the design of constructional details

The actual Project will consist of the preparation of a detailed design for an engineering scheme complete with report specifications and estimate Each student will do his work independently.

Group VII.—PHYSIQUE AND GENERAL FITNESS

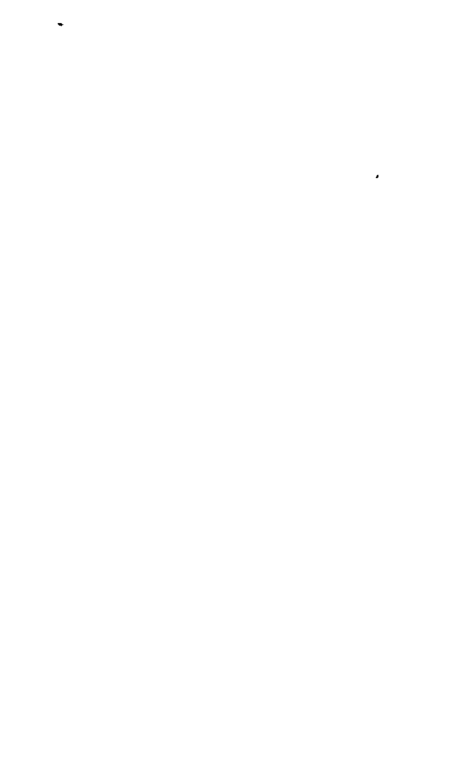
(1st and 2nd years)

Physical Drill.—Proficiency in games and athletic sports Physical and moral fitness for work in the engineering profession

The sub heads and marks allotted to Group VII Physique and General Fitness are —

Physical Drill	100
Athletics—Proficiency in games and sports	150*
General Fitness—Physical and moral fitness for work in the engineering profession	150
Total	400

*Athletics will be marked for Football Hockey Tennis and Athletic Sports and such marks will be awarded by the Headmaster in consultation with the Principal Any three will carry the 150 marks



COURSE OF STUDY AND SYLLABUS

DRAFTSMAN CLASS

Building Construction

(1st Year, 1st Term)

Building Materials—Brick stone, timber and metal—various kinds and their qualities.

Brick-work—Technical terms, English and Double Flemish bonds, arches, sills, lintels, bonding of new and old work, *plastering and pointing*

Stone Masonry—Different types of stone masonry—Ashlar, Block in course and rubble, technical terms, Corbel, jamb, sill, coping and lintel

(1st Year, 2nd Term)

Carpentry and Joinery—Various types of joints, a king post truss, queen post truss, various types of doors, windows, clerestory windows and their joints

Reinforced Concrete—Materials used and their qualities, function of each of the constituents, method of construction including details of false work

(2nd Year, 1st Term)

Details of a fireplace chimney stack and flue Simple flat and pent roofs, floors and staircases

(2nd Year, 2nd Term)

Working out sizes of scantling for roofs, floor joists, beams (wooden, steel and concrete) Calculations for the design of foundations, footings, lintels, arches and columns

(3RD YEAR, 2ND TERM)

Calculation of simple Reinforced Concrete Structures — beams, slabs, and short columns

Elementary Mathematics

(1ST YEAR, 1ST TERM)

Algebra—Factors, square roots, simple equations and simple quadratic equations

Mensuration—Areas of rectangles, triangles, parallelograms and quadrilaterals

(1ST YEAR, 2ND TERM)

Mensuration—Area of regular polygons, circles and their segments, volumes of cubes, prisms, cones, pyramids and cylinders

(2ND YEAR, 1ST TERM)

Elementary Trigonometry—Sines, cosines, tangents, cotangents and their use and logarithms

Elementary Applied Mechanics—Conception of Force, stress and strain Various types of stresses Moments, Bending Resisting, Shearing force and their application to simple beams

Estimating

(2ND YEAR, 2ND TERM)

Estimating of the following

(1) A small building with pent roof

(2) *A small building with flat roof*

(3) A small culvert

(3RD YEAR)

1st and 2nd Term—The same as in Overseer Class 2nd Year

Ferrotype

Tracing of five drawing plates on linen Taking out blue prints

(1ST YEAR)

Drawing Plates

(1) Block printing of modern style and ornamental practice of freehand printing

(2) Italic printing—slanting and upright

(3) Scales—principles of scales and scaling

(4) Simple Geometrical figures Construction of arches

(5) Orthographic projections Projections of solids

(6) Flat tinting

(7) Simple building with oblique sections

(8) One small culvert with oblique sections

(9) A simple building with flat roof and its constructional details

(10) Measured drawing of residential building with pitched roof showing oblique sections

(11) Details of doors and windows and other large scale details of one of the above buildings

Lecture work

Description and use of instruments and paper used in Engineering Drawing

Use of projective drawing in building drawing

(2ND YEAR)

Drawing Plates

(1) Parallel of the orders Their application

(2) Constructional details of one of the various types of domes

(3) Intersection of solids

(4) Shades and shadows

(5) A big residential building—double-storeyed

(6) A school building, a court house, a post office, a bank building or a small hospital

(7) A water tower

(8) Regulator and head of a small distributary.

(9) A canal fall

(10) A canal syphon

(11) Structural Steel Work Details

(12) Plotting from field book of chain Survey

(13) Plotting a longitudinal section

Lecture work

Five orders of classic architecture

Different types of pillars in Indian style of architecture

Different types of arches including those in Indian style.

(3RD YEAR)

Drawing Plates

(1) Sketching and rendering

(2) Making perspective of a building

(3) A Reinforced Concrete bridge

(4) Measured drawing of a trussed girder bridge

(5) Measured drawing of a large building including rendering and preparing show drawings

PRIZES

CIVIL ENGINEER CLASS.

THE COUNCIL OF INDIA PRIZE OF Rs 1,000

To the most distinguished student, who obtains the Honours Diploma in Civil Engineering.

THE THOMASON PRIZE OF Rs. 250.

To the most distinguished student, who obtains the Honours Diploma in Civil Engineering but does not obtain the Council of India Prize

THE RAI BAHADUR KANHAIYA LAL GOLD MEDAL

To the most distinguished Indian student, who does not obtain the Thomason or Council of India prize

THE THOMASON GOLD MEDAL AND BOOKS WORTH Rs 25.

To the student who submits the best engineering projects of a certain minimum excellency

THE CAUTLEY GOLD MEDAL

To the student who is the best mathematician and who obtains the highest marks in the papers shown below, but not less than 2/3rds of the total marks i e 416

1st Term

Mathematics	50
Mechanics	50

2nd Term

Mathematics	75
Mechanics	100
Graphic Statics	50
Mechanics Tutorial	50
	375

3rd Term

	375 × 4	150
Mathematics		75
Mechanics		100

4th Term

Mathematics		100
Mechanics		100
Tutorial		100
	Total marks	625

THE CALCOTT REILLY MEMORIAL GOLD MEDAL

To the student who obtains the highest marks in Applied Mechanics (Strength of Materials and Theory and Design of Structures)

The papers concerned are detailed below

1st Term

Strength of Materials	50

2nd Term

Strength of Materials	100
	150

3rd Term

	150 × 4	60
Strength of Materials and Theory of Structures		100

4th Term

Theory of Structures	100
Design of Structures	100
	360

5th Term

	360× 7	252
Theory and Design of Structures	1st paper	100
Ditto	2nd paper	100
	Total marks	452

THE GENERAL MACLAGAN PRIZE BOOKS TO THE VALUE OF Rs 34

To the student who obtains the highest number of marks in experimental science Highest marks in Electrical Engineering final year result plus highest marks in Physics 1st year results

THE SUSHILA AND J MITRA MEMORIAL SILVER MEDAL

To the Indian student who obtains the highest number of marks in chemistry in 2nd year results If there is a tie 1st year results will decide

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THE PURAN MAL SILVER MEDAL FOR PUBLIC HEALTH ENGINEERING

The Puran Mal Silver Medal for Public Health Engineering awarded to the Civil Engineer class 3rd year student who obtains the highest marks in the final external examination paper on Water Supply and Sanitary Engineering

SILVER MEDALS

for

SURVEYING HIGHEST MARKS IN THREE YEARS

DRAWING HIGHEST MARKS IN FIRST YEAR

MECHANICAL ENGINEERING HIGHEST MARKS IN THREE YEARS

Civil Engineering (Theory)

To the student who obtains the highest marks in Civil Engineering (Theory)

		Marks	
	1st Term		
Building Construction		50	Subjects of Surveying Drawing and Public Health Engineering have been omitted as they have a separate medal for each of them.
	2nd Term		
Building Construction		100	
Communications		100	
		250	
	3rd Term		
	250 × 4	100	
Hydraulics		100	
Communications		100	
	4th Term		
Irrigation		100	
Hydraulics		100	
Reinforced Concrete		100	
		600	
	5th Term		
	600 × 7	420	
Irrigation		100	
Reinforced Concrete		100	
Total marks		620	

Laboratory Work

To the student, who obtains the highest number of marks in practical and class work in Physics and Chemistry.

OVERSEER CLASS

THE GENERAL MERIT PRIZE OF A SILVER MEDAL AND Rs 100

To the most distinguished student, who obtains the highest number of marks

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THE KEAY MEMORIAL SILVER MEDAL AND Rs 18 (APPROX)

To the student, who obtains the highest number of marks in Estimating

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THE DURGA DAS DUTTA MEMORIAL SILVER MEDAL

To the most distinguished Indian student, who obtains the Higher Certificate and who obtains the highest number of marks

THE RAI BAHADUR KANHAIYA LAL SILVER MEDAL

To the most distinguished Indian student who obtains the highest number of marks

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THE RAI BAHADUR KANHAIYA LAL SILVER MEDAL

To the Indian student, who obtains the second highest number of marks

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THE FAIRLEY MEMORIAL SILVER MEDAL

To the student, who obtains the highest number of marks in Applied Mechanics

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THE SULLIVAN MEMORIAL SILVER MEDAL

To the student, who obtains the highest number of marks in Mechanics

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LALA PURAN MAL MEDAL FOR PUBLIC HEALTH ENGINEERING

The Puran Mal Silver Medal for Public Health Engineering awarded to the Overseer class 2nd year student who obtains the highest marks in the final external examination paper on water supply and sanitary engineering

THE PROJECT PRIZE OF A SILVER MEDAL.

To the student, who submits the best engineering project.

SILVER MEDALS
for

MATHEMATICS.	DRAWING.
DESCRIPTIVE ENGINEERING.	
SURVEYING.	WORKSHOP PRACTICE.

To those students, who obtain the highest number of marks in these subjects

DRAFTSMAN CLASS

THE GENERAL MERIT PRIZE OF A SILVER MEDAL AND Rs. 30

To the most distinguished student, who passes out head of the class.

A SILVER MEDAL AND Rs.20.

To the student, who passes out second in the class

N B—No prize will be awarded when the competition for it is insufficient or for any other adequate reasons

GENERAL.

In addition to the numerous academic prizes there are many challenge cups and trophies for various events. These are mentioned below:—

(i) *The Harcourt Butler Cup*—

The cup is awarded under two sub-heads "Work" and "Play".

"Play" shall be deemed to be that portion of the course (Civil Engineer Class) called "Physique and General Fitness" group as follows:

A. T. I. and U. T. C. ... ... 250 marks.

Athletics—Proficiency in Games and Sports 350 marks.

General Fitness—Physical and Moral Fitness for work in the Engineering Profession 200 marks

Total—For Play Group 800 marks

Total—For Studies or Work for the three years 5 425 marks

This total is reduced to a maximum of 800 marks by the multiplier 800/5 425 (or 0 147465)

Harcourt Butler Cup is awarded to the student who obtains the highest marks out of a total of 1 600 marks consisting of 800 marks for play and 800 marks (reduced from a total of 5 425 as above) for work

In case of a tie the student who obtains higher marks in the group Work (i e studies)

(ii) The Sandes Challenge Cup is to be awarded annually as a Challenge cup to the College student of whatever Class who is adjudged the best in all Games and Athletic Sports combined (excluding Rowing) It is to be awarded on the result of the College Championship events in Games and Athletic Sports and on skill and performance in team games such as Cricket etc '

2 The cup is awarded on marks on a basis of 50 per cent each for Games and Athletic Sports by a Committee composed of

(i) President of Recreation

(ii) President Athletic Sports Committee

(iii) Officer in charge of each Game

3 For the award of marks the two groups are divided into 4 sub groups each Each sub group carries a maximum of 10 marks These sub groups are

(a) *Games*—

(i) Tennis

(ii) Hockey

(iii) Football

(iv) Cricket

(b) Athletic Sports—

(v) Throwing the Cricket ball and putting the shot

(vi) High Jump Long Jump, Hurdles

(vii) 100, 220, 440 Yards Races

(viii) 880 Yards Race, 1 mile and Cross Country Races

(a) Games—In tennis marks will be allotted as follows

Finals or Olympic	10 marks
Semi Finals	8 marks
Quarter Finals	6 marks

These positions refer to the results of the annual tournaments for that year In the event of a competitor coming amongst first eight in singles and doubles the mean result will count In Cricket Football and Hockey any student who represents the College in Olympic will be awarded 10 marks Otherwise 8 or 6 marks will be allotted by the Officer in-charge of the game at his discretion

(b) Athletic Sports—The award of marks will be decided by the Championship placing as follows

First and Second positions	10 marks
Third and Fourth positions	8 marks
Fifth and Sixth positions	6 marks

The mean of marks obtained by a student in each of the events of the sub groups 5, 6, 7, 8 will then be the marks obtained by the student concerned in that sub group

4 Marks are awarded out of a maximum of 100 marks, the balance of 20 being allotted to a special sub group 9 The method of award of these 20 marks is as follows

If a student obtains marks in X of the sub groups 1, 2, 3, 4 and Y of the sub groups 5, 6, 7, 8, then

in the sub-group 9 he will be awarded 5X or 5Y marks whichever is less *except* that, in case he obtains marks in seven out of the first eight sub-heads, he will be awarded 17 marks

Examples—A student in sub-group 9 obtains—

0 marks if he gains marks in 1, 2, 3, 4 and none in 5, 6, 7, 8.
5 marks if he gains marks in 1, 2 3 and also in 5
10 marks if he gains marks in 1, 2 and also in 6, 7, 8
15 marks if he gains marks in 2, 3, 4 and also in 6, 7, 8
17 marks if he gains marks in 1, 2, 3, 4 and also in 5, 6, 7
20 marks if he gains marks in 1, 2, 3, 4 and also in 5, 6, 7, 8.

5 The total of marks obtained in the nine sub-groups will then decide the winner of Sandes Challenge Cup

(iii) The Lion Challenge Trophy awarded to the student, irrespective of class who obtains the highest number of marks in the Annual Sports

(iv) The Runner up Challenge Cup awarded to the student, irrespective of class, who obtains the second highest number of marks in the Annual Sports

(v) The Bradshaw Smith Challenge Cup awarded to the student irrespective of class, who wins the Cross Country Race

(vi) The Cross Country Race Challenge Cup awarded to the student irrespective of class, who finishes second in the Cross Country Race

(vii) The Verriéres Challenge Cup awarded to the winning Relay Race Team irrespective of class at the Annual Sports

(viii) The McLaren Challenge Cup awarded to the winning Tug-of War Team irrespective of class at the Annual Sports

(ix) The Barnett Challenge Cup, awarded to the Overseer Class student, who obtains the highest number of marks in the Annual Sports, not being a winner of either the Lion Trophy or Runner-up Challenge Cup

(x) The Single Sculls Challenge Cup, awarded to the winner of this race in the Annual Regatta, irrespective of class.

(xi) The Officers Challenge Cup, Prince of Wales' Own Sappers and Miners, awarded to the winners of the Open Double Sculls in the Annual Regatta, irrespective of class.

(xii) The Boating Challenge Cup, awarded to the best oar of the 3rd year Civil Engineering Class or 2nd year overseer class.

(xiii) The Beer Challenge Cup, awarded to the winners of the Pair Oars Race, irrespective of class

(xiv) The Challenge Fours Cup awarded to the winners of the Fours race in the Annual Regatta, irrespective of class

(xv) The Tennis Singles Challenge Cup, awarded to the winner of the annual open Tennis Tournament, irrespective of class

(xvi) The Tennis Doubles Challenge Cup, awarded to the winners of the annual open Tennis Tournament, irrespective of class.

(xvii) The Puri Cup, awarded to the winner of the annual open Squash Racquets Singles Tournament, Civil Engineer Class only.

(xviii) The Squash Racquets Singles Runner up Cup, awarded to the runner-up of the annual open

Squash Racquets Tournament, Civil Engineer Class only

(xix) The Mechanical and Electrical Engineer Class Challenge Cup, awarded to the student, irrespective of class, who obtains the highest aggregate in the annual Olympic contest with the Officers and British Non commissioned Officers of the King George's Own Sappers and Miners

(xx) The Vizianagram Cup, awarded annually to the best Indian athlete of the 3rd year Civil Engineer Class

(xxi) The Shooting Challenge Cup, awarded annually to the Section of the Platoon of the University Training Corps which obtains the highest score.

(xxii) The Stampe Challenge Cup for inter-class athletics Open to all classes

(xxiii) The Inter year class football and hockey challenge cup Open to all classes

LIST OF TEXT-BOOKS.

LIST OF TEXT-BOOKS FOR DIFFERENT CLASSES

Each student should own his own copy of each book marked with an asterisk and these are obtainable generally from the College Book Depot at 12½ per cent off published prices Such books will not be obtainable on loan from the College Library Books unmarked with an asterisk are recommended for reference and such books are obtainable on loan from the College Library.

Particulars		Cost
		Rs a
CIVIL ENGINEER CLASS, I YEAR		
* 'Dynamics' —Landon		5 8
*' Statics "—Puri, B D		5 12
* 'Examples in Theory of Structures' —Landon		3 8
*" Theory of Structures' —Morley	..	8 8
*' Roorkee Treatise on Surveying '—Part I		3 3
*" Heat for Engineers' —Darling		7 12
* 'Heat Engines '—Low		10 0
* 'Theory of Machines '—Mackay	.	13 12
Total	..	57 15

" Rivington's Notes on Building Construction "—Parts I and II

" Mitchell s Building Construction"—Advanced Course

" Architectural Building Construction "—Jaggard and Drury, Volumes I, II and III

" M F S Handbook "—Volume I, Part I

" Chamber's Mathematical Tables "

" Dynamics "—Ramsey, Part I.

Particulars

"Hydrostatics"—Jessop and Gaunt
"Calculus"—Lamb
"Elementary Calculus"—B D Puri
"Modern Framed Structures"—Johnson, Bryan and Turneaure, Volumes I, II and III
"Stresses in Framed Structures"—Hool and Kinne
"Analysis of Engineering Structures"—Pippard and Bake-
"Applied Elasticity"—Timoshenko and Lessells
"Strength of Materials"—Case
"Hydraulics"—F C Lea
"Applied Hydraulics"—Addison
"Surveying"—Norman Thomas
"Chemistry of Materials"—Lighon
"Metallography"—Desch
"Metallurgy of Common Metals"—Austin
"Cements, Limes and Plasters"—Eckel
"Heat and Principles of Thermo dynamics"—Draper
"Steam and Steam Engine"—Ripper
"Theory of Machines"—Toft and Kersey
"Technical Electricity"—Davidge and Hutchinson

Civil Engineer Class, II Year	Cost Rs	a.
*"Structural Engineering"—Husband and Harby	10	12
*"Roorkee Treatise on Bridges"	7	0
*"Military Engineering (Volume V) Roads, 1935"	5	0
*"Roorkee Treatise on Railways"	5	1
*"Roorkee Treatise on Surveying" Part II	2	10
*"Callendar's Steam Tables"	2	4
*Mollier's "Diagrams"	1	4
*Maccall's "Continuous Current"	9	8
*Maccall's "Alternating Current"	9	8
*"Applied Thermo dynamics"—Robinson	10	12
*"Hydraulics" by Lewitt	8	10
*"Indian Water Works Practice" by Banerjee	..	
Total	72	5

"Roorkee Treatise on Estimating"
"War Office Manual of Field Engineering," Volume II

Particulars

"Engineering Design "—Fordham
"Competitive Design of Steel Structures "—Russell and Dowell
"Structural Engineering "—Kirkham
"Irrigation Pocket Book "—Buckley
"River Discharges "—Hoyl and Grover
"Waterworks Handbook "—Flinn, Weston and Bogert
"Rainfall Reservoirs and Water Supply "—Binnie
"Road Engineering "—Leeming
"Differential Equations "—Miller.
"Differential Equations "—Murray
"Plane and Geodetic Surveying "—Clark, Volume II
"Text book of Topographical Surveying "—Close
"Elements of Curve Design "—Royal-Dawson.
"Railway Surveying and Permanent Way Work "—Perrott and Badger
"Petrology "—Hatch
"Geology "—Giekie
"Balancing of Engines "—Dalby
"Design of Electrical Machinery "—Clayton
"Electrical Engineering "—Thomalen
"Permanent Way "—Cole
"Stream Gauging "—Liddell
"Dissipation of Energy below Falls "—Inglis and Jogleke
"Hydraulic Structures "—Volumes I and II, Schoklitsch.
"Irrigation Canal Falls "—Montague
"Fluming "—Montague

CIVIL ENGINEER CLASS, III YEAR	Cost Rs	a
*"Elements of Reinforced Concrete Design "—Adams	5	0
*"Concrete Plain and Reinforced " by Taylor Thompson, Volume I . . .	27	0
*"Sewers " by Bevan and Rees .	6	0
*"Sewage Purification and Disposal " by Kershaw .	..	
Total .	38	0

Particulars

"Modern Sewage Treatment "—Francis
War Department Manual on Drainage "
"Steam Turbines "—Kearton
" Heat Engines "—Inchley
" Alternating Current "—Kemp
" Transmission of Alternating Current "—Rapson
" Diagnosing of Troubles in Electrical Machinery "—Miles Walker.
" Protection of Alternating Current Circuits "—Stubbings
" Reinforced Concrete Bridge Design "—Adams and Chettoe
" Reinforced Concrete Bridges "—Scott
" British Standard Specifications " for Portland Cement
"The Transmission and Distribution of Electrical Energy "—H. Cotton
" Notes on flumed aqueducts "—Inglis
" Notes on Standing Wave Flumes and Flume Meter Falls "—Inglis.
" Energy of Flow, Pressure and Momentum Diagrams "—Montague.
" Design of Weirs on Permeable Foundations "—A. N. Khosla.
" Design of Concrete Structures "—Urquhart and O'Rourke.
" Surveying "—Norman Thomas
" Plane and Geodetic Surveying ", Volumes I and II—Clark.
"Thermo dynamics for Engineers "—Ewing.
" Steam Power "—Dalby.
" Balancing of Engines "—Dalby

Particulars	Cost Rs. a.
OVERSEER CLASS, I YEAR	
*"Roorkee Treatise on Earthwork"	1 12
*"Building Construction, Advanced Course"—Mitchell	7 14
*"Building Construction, Elementary Course"—Mitchell..	4 14
*"Elementary Trigonometry"—Loney	3 1
*"Elementary Mensuration"—Pierrepoint, Parts I and II	3 14
*"Elements of Statics and Dynamics"	6 8
*"Roorkee Treatise on Surveying", Part I ..	3 1
*"Heat Engines"—Low	10 0
*"Class Book of Physics"—Gregory and Hadley, Parts III, IV and V (Vol. I), Parts VI, VII and VIII (Vol. I) at Rs.2 each	4 0
*"Logarithmic Tables"—College Manual	1 8
Total ..	46 8

"Mechanics for Engineers"—Morley.
"M. E. S. Handbook"—Volume I, Part I.

Particulars	Cost Rs. a.
OVERSEER CLASS, II YEAR	
*"Building Mechanics"—Sheppard	5 8
*"Military Engineering (Vol. V) Roads, 1935" ..	5 0
*"Roorkee Treatise on Railways"	5 1
*"Roorkee Treatise on Bridges"	7 0
*"Roorkee Treatise on Irrigation", Volume I ..	4 6
*"Sewers and Sewerage"—Whyatt	1 12
*"U. P. Irrigation Technical Paper no. 1 (Design of Channels)"—G. Lacey	0 14
*"Roorkee Treatise on Estimating"	6 9
*"Elementary Hydraulics for Technical Students"—F. C. Lea	4 14
*"Elements of Reinforced Concrete" by Adams ..	5 0
Total ..	46 0

Particulars

War Office Manual of Field Engineering, Volume II.

"Sewage Disposal"—Kershaw.

"Strength and Elasticity of Structural Members"—R. J. Woods.

"Structural Engineering"—Husband and Harby.

"Reinforced Concrete Simply Explained"—Oscar Faber.

"Examples of Reinforced Concrete"—Oscar Faber.

DUPLICATE CERTIFICATES

For duplicate diplomas and certificates the following charges are levied

	Rs
Diploma	24
As Assistant Engineer	24
As Upper Subordinate	16
As Overseer	16
As Lower Subordinate	8
As Draughtsman	8

SUBSIDIARY DEPARTMENTS OF THE COLLEGE

LIBRARY

The College Library contains about 27,000 volumes classified as under *

PART I

Scientific and Professional Works

Class	Subject
Class AA	Pure Mathematics
,, AB	Applied Mathematics
,, B	Physics
C	Chemistry
D	Geology Mineralogy and Palæontology
E	Other Branches of Natural Science
Class F	Mental, Moral and Social Science
,, G	Civil Engineering
H	Surveying and Drawing
,, J	Electrical Engineering
K	Mechanical Engineering
,, L	Other Professional Works

PART II

General Literature, Art, Industries, etc

Class	Subject
Class M	Recreations and Amusements
N	Geography Ethnography and Travel
O	History
,, P	Literature and Philology
Q	Arts and Trades
,, R	Fine Arts
Class S	Commerce and Economics
T	Agriculture Forestry and Gardening
,, U	General Scientific and Professional Journals and Transactions
,, V	Indian Government Publications

*The above is the existing classification but a new classification according to the Dewey System is now in progress

Year	Name	Rs
186J	T Graj Esq	°b
,	J Soutl on, Esq	25
	S rgt A Forsyth	30
	J H Cl pman Esq	°5
	G McArthur Esq	50
	J G llan Esq	25
	W Pl ill ps Esq	300
	C Collogl er Esq	250
18 0	Ra Bahadur Kanhya Lal (*for Kanhya Lal Pr zs Endowment*)	100
	Capt C E D Branson 37th P N I	100
	Dr Murray Thomason M D F R S E	200
1872	L eut G W Martin 83th Reg ment	100
1873	W W llcocks Esq (*to Eng neer Students Mess*)	100
	E Hodges Esq	100
	H H the Maharaja of V zianagram	1 000
1874	R B Smart Esq (Rev Sur) (*for Sur ey ng Prize*)	10
	R W L Hawk ns Esq (*to Engineer Students Mess*)	100
	L eut W T McLaughlin 48th Regiment	100
	Reg nald H McLaughl n Esq	50
18 5	V B Paterson Esq; S Jarman Esq; F J McLaughl n Esq; R L Campbell Esq (*to Engine r Students Mess*)	190
	R W L Toozs Esq	
	A E Adie Esq	4
	L eut S M Maycock R E (*fo Mechan sm Prize*)	50
,	R B Smart Esq (Rev Sur) (*for Survey ng Prize*)	100
	W A Irancken Esq Ass stant Super ntendent Canal Foundry (*to College Recreat on Fund*)	50
1876	L eut S M Maycock R E (*for Mechan sm Prize*)	50
	Capt Allan Cunn ngham R F *for Appl ed Mathematics Priz*)	50
	Subscr bers to Keay Memor al (l a ance of subscr pt ons after erect g Tablet)	1 000
1877	H H the Maharaja of Jummoo and Kash nere	1 000
	Raja of Rutlam	100
	Capta n Allan Cunningham R E (*for Appl ed Mathematics Prize*)	50
	Rai Bahadur Kanhya Lal (to chan e the Pr e Endowment of 1870 to the *Rai Bahadur Kanhya Lal Gold Medal* s milar to Thomason Medal)	1 500
,	L	50
,	C	750
	M	0
		100

Year	*Names*	*Rs*
1878	Colonel J G Medley R E (*for Civil Engineering Prize*)	50
,,	*Lieut S M Maycock (for Mechanism Prize)* ..	50
,,	Major A M Brandreth, R E (*for Note Books and English Prizes*)	50
,,	Anonymous from Jhansi	100
1880	Colonel J G Medley R E (*for Civil Engineering Prize*)	50
,,	Lieut S M Maycock R E (*for Surveying Prize*)	50
,,	Major A M Brandreth R E (*for Note Books English and Romanised Urdu Prizes*)	70
	Babu Krishna Chandra Banerji (*for Mathematics*)	50
1881	Colonel J G Medley, R E (*for Civil Engineering Prize*)	50
,,	Lieut S M Maycock R E (*for Surveying Prize*)	50
,,	Major A M Brandreth R E (*for Note Books English and Romanised Urdu Prizes*)	70
,,	W P Housden Esq (*to Engineer Students Mess*)	100
1882	Colonel J G Medley R E (*for Civil Engineering Prize*)	50
,,	Lieut Col A M Brandreth R E (*for Note Books English and Romanised Urdu Prizes*)	70
,,	Lieut J H C Harrison R E (*to Engineer Students Mess*)	100
,,	,, J H C Harrison R E (*for Surveying Prize*)	50
1883	Colonel J G Medley R E (*for Civil Engineering Prize*)	50
	Lieut Col A M Brandreth R E (*for Note Books English and Romanised Urdu Prizes*)	70
,,	Lieut J H C Harrison R E (*for Surveying Prize*)	50
1884	Lieut Col A M Brandreth R E (*for Civil Engineering Note Books and English Prizes*)	100
1885	Lieut Col A M Brandreth R E (*for Civil Engineering Note Books and Estimating Prizes*)	100
,,	Lala Bihari Lal (*for Language Prize*)	15
1886	Lieut Col A M Brandreth R E (*for Civil Engineering Note Books and Estimating Prizes*)	100
,,	Lala Bihari Lal (*for Language Prize*)	15
1887	Lieut Col A M Brandreth R E (*for Civil Engineering Note Books and Estimating Prizes*)	150
,,	Lala Bihari Lal (*for Language Prize*)	15
,,	Rai Bahadur Kanhya Lal to found *Silver Medals* for Indians of Upper and Lower Subordinate Classes	1 000
1888	Lieut Col A M Brandreth R E (*for Civil Engineering Note Books and Estimating Prizes*)	100
,,	Lala Bihari Lal (*for Language Prize*)	15
,,	Rai Bahadur Kanhya Lal	100
1889	Lieut Col A M Brandreth R.E. (*for Civil Engineering Note Books and Estimating Prizes*)	100
,,	Lala Bihari Lal (*for Language Prize*)	15
1890	Lieut Col A M Brandreth R.E. (*for Civil Engineering, Note Books and Estimating Prizes*) — —	100

Year	*Names*	*Rs.*
1890	Lala Bihari Lal (*for Language Prize*)	15
1891	Lieut Col A M Brandreth, R E (*for Civil Engineering, Note Books and Estimating Prizes*)	100
,,	Rai Bahadur Behari Lal (*for Language Prize*)	15
1892	Colonel F D M Brown V C (*for Civil Engineering Prize*)	50
,,	Rai Bahadur Bihari Lal (*for Language Prize*)	15
1893	Major J Clibborn (*for Civil Engineering Prize*)	50
,,	Rai Bahadur Bihari Lal (*for Language Prize*)	15
1894	Major J Clibborn (*for Civil Engineering Prize*)	50
,,	Rai Bahadur Bihari Lal (*for Language Prize*)	15
1895	Major J Clibborn (*for Civil Engineering Prize*)	50
,,	Rai Bahadur Bihari Lal (*for Language Prize*)	15
1896	Lieut Col J Clibborn (*for Civil Engineering Prize*)	50
	H E the Prime Minister of Nepal (*for a Tower Clock*)	2 500
1897	Lieut Col J Clibborn (*for Civil Engineering Prize*)	50
1898	Lieut H B D Campbell, R E (*for Civil Engineering Prize*)	12
,,	Rai Bahadur Govind Das (*for English*)	16
1899—1900	Lieut. Col J Clibborn (*for Civil Engineering Prize*)	12
1906—1922—1924	Babu Amar Nath Dutt, B A LL B (*for best Indian student obtaining Sub Engineer's certificate, U S class*)	15
1906—1917	Lala Ram Sahai (*for Language Prize L S class*)	15
1908	Members of the Fairley Memorial Prize Committee (*for Applied Mechanics U S class*)	500
1909—1912	Sirdar Kishan Singh (*for Drawing Mechanical Apprentice class*)	11
1909	Calcott Reilly Memorial Fund has been transferred to this College on the abolition of the Royal Indian Engineering College Coopers Hill England (*Gold Medal for Applied Mechanics*)	1 800
,,	Do	
		2,000
1911—19	*U S class*)	95
1911—1914	Srijut Hem Chander Baugh (*for Natural Science, Mechanical Apprentice class*)	1 5
1921—1923	Sir Sidney Crookshank for cricket	30
1922—1927	Sushila and J Mittra Memorial Silver Medal	15
1923-24	Babu Amar Nath Dutt B A LL B (*for best Indian student in Civil Engineer class in Civil Engineering Design*)	16
	[illegible] *best Civil Engineer* [illegible] *n*)	100
	(*for best Indian Overseer Class*)	15
1932	G Lacey, Esq (*for the best performance in the Thomasonian Society*)	25

Year	*Names*	*Rs.*
1932	Babu Amar Nath Dutt, B.A., LL.B. (*for best Indian student obtaining Higher Certificate in Overseer Class*)	16/1
1933	G Lacey, Esq (*for the best performance in the Thomasonian Society*)	25
,,	Babu Amar Nath Dutt, B.A., LL.B. (*for best Indian student obtaining Higher Certificate in Overseer Class*)	16/4
1934	Ditto ditto	16/4
1935	Ditto ditto	16/4
1936	Ditto ditto	9/10
,,	G Lacey, Esq (*for the most capable speaker in the Thomasonian Society*)	25
1937	Babu Amar Nath Dutt, B.A., LL.B. (*for best Indian student obtaining Higher Certificate in Overseer Class*)	15
1938	Ditto ditto	13
,,	G Lacey, Esq (*for the most capable speaker in the Thomasonian Society*)	25
,,	Lala Puran Mal, *retired Assistant Engineer, Public Health Department for two silver medals in Public Health Engineering for Civil Engineering and Overseer Classes respectively*	500
,,	Lala Puran Mal *also paid for cost of dies of above silver medals*	242
1939	Babu Amar Nath Dutt B.A. LL.B. (*for best Indian student obtaining Higher Certificate in Overseer Class*)	10
,,	G. Lacey, Esq (*for the most capable speaker in the Thomasonian Society*)	25
1940	Babu Amar Nath Dutt B.A., LL.B. (*for best Indian student obtaining Higher Certificate in Overseer Class*)	10
,,	G Lacey, Esq (*for the most capable speaker in the Thomasonian Society*)	25
1941	Babu Amar Nath Dutt, B.A. LL.B. (*for best Indian student obtaining Higher Certificate in Overseer Class*)	10
,,	G Lacey, Esq., B.Sc. (*for the most capable speaker in the Thomasonian Society*)	25
1942	Babu Amar Nath Dutt B.A. LL.B. (*for best Indian student obtaining Higher Certificate in Overseer Class*)	12
,,	G Lacey Esq., B.Sc., C.I.E., I.E.S. (*for the most capable speaker in the Thomasonian Society*)	25
1943	Babu Amar Nath, B.A. LL.B., (*for best Indian student obtaining Higher Certificate in Overseer Class*)	14
,,	G Lacey Esq B.S. C.I.E. I.E.S., (*for the most capable speaker in the Thomasonian Society*)	25

RULES OF THE ADVISORY COUNCIL, THOMASON COLLEGE OF CIVIL ENGINEERING, ROORKEE.

Re-constituted under G. O. No. 556G/XV—555-1932, *dated June* 2, 1933, *copy received with Director of Public Instruction's letter No* G/1315, *dated June* 2, 1933 *Rules approved in Director of Public Instruction, U. P. letter No* G/1675, *dated July* 26, 1933 *and G. O., U. P. Edn. Dept no.* 168C/XV—555, *dated December* 15, 1933.

1. The function of the Council will be to advise Government on questions of policy, organization, finance, staff, buildings, equipment, the formation or re-constitution of classes, curricula, rules of admission and any other subject connected with the College on which Government may require its advice As the Council will be closely associated with the College and will visit it periodically, it will also be in a position to take the initiative in suggesting improvements and reforms in respect of any of the above matters

2. The Council will consist of —

(1) The Chief Engineer, Public Works Department, Irrigation Branch

(2) The Chief Engineer, Public Works Department Buildings and Roads Branch

(3) The Director of Public Instruction, United Provinces

(4) & (5) Two non-official members, elected by the Legislative Assembly, United Provinces

(6) A representative of the United Provinces branch of the Institution of Engineers, India.

(7) A representative of University Education, nominated by the United Provinces Government

(8) A representative of the Institution of Civil Engineers, London

(9) The Principal, Thomason College, Roorkee

3. The senior of the two Chief Engineers shall be the President of the Council

4 The Principal of the College will be *ex officio* Secretary of the Council and shall have a right to vote

5 The term of office of non official members of this Council shall be for a period of three years, provided that a member shall cease to be a member of the Advisory Council when he ceases to be a member of the body which he represents, a new election shall be held by each new Legislative Assembly at its first session, and, at the same time, other bodies shall be required to make their nominations

6 The committee shall meet at least once a year at Roorkee on a date to be fixed by the Principal after informal consultation with the President The Council may also hold any other meetings whenever it appears desirable to do so, at any place in the United Provinces to be fixed by the President

7 Notice of the time and place of meeting will be issued to each member by the Secretary at least 6 weeks in advance

8 Four members of the Council, exclusive of the Principal, who must always be present shall constitute a quorum

Note —Should the quorum fail and should the President consider the meeting as constituted specially competent to discuss the issue in point the proceedings shall go forward the opinion of the other members being subsequently obtained by circular

9 The Secretary of the Council may in urgent and other cases submit matters for the opinion of the Council by correspondence

10 The proceedings of the Council after approval, will be written in a consolidated form and a typed copy of the same will be circulated to all members and one copy submitted to Government through the Director of Public Instruction for orders

11. The Council is authorized to call in experts for the consideration of any question on which experts' advice is required, and to recommend the appointment of Sub-Committees to deal with particular questions or with special branches of the work of the College Before consulting any expert whom it is proposed to remunerate for his advice, the Council should obtain the sanction of Government to the payment of such remuneration

12 The official members when attending meetings will draw travelling allowance under the rules The non official members will each be paid the ordinary travelling and daily allowance admissible to an officer of the first class

13 It is expected of members that they will from time to time pay personal visits of inspection to the College and thus keep in touch with its circumstances its work and its needs and aspirations

RULES OF THE BOARD OF STUDIES, THOMASON COLLEGE OF CIVIL ENGINEERING, ROORKEE.

Approved by the Government, vide *letters of the Director of Public Instruction, nos G/2423, G/3358 and G/3828 dated October* 23, 1925, *September*, 1934 *and November* 14, 1938, *respectively*

1 The members of the Board will include the Principal, all Professors and Assistant Professors of the College The Principal will be *ex officio* President A Lecturer or Lecturers of the College may at the discretion of the President, be co opted for any particular meeting of the Board

2 The meetings of the Board will be convened by order of the President

3 The Secretary will be elected from among the members of the Board of Studies

4 The Secretary will circulate, before each meeting, a copy of the agenda together with all the necessary papers relating to subjects entered for discussion

5 Any member with the previous sanction of the President, may bring forward for discussion any subject of an academic nature pertaining to the College work

6 The Board of Studies will be an Advisory Body, it will not exercise any control over discipline but in consultation with the President will assist him in —

(a) The appointment of moderators for each external paper

(b) The scrutiny of all sessional and final pass lists of the Civil Engineer and Overseer classes and the award of grace marks under the procedure

as laid down for their allotment by Government order

(c) The allotment of marks for general fitness, total 200 to the students of the 3rd year Civil Engineer Class just prior to their completing their course

(d) The preparation or revision of all time tables, syllabuses and courses of study of all classes as the President may deem necessary

7 The President, at his discretion, may at any time consult the Board on any other subject affecting the College work

8 The minutes of each meeting will be recorded by the Secretary, and read and confirmed at the following meeting

STANDING ORDERS

OF THE

Thomason College of Civil Engineering, Roorkee, 1943-44

and till further notice

General rules

Each student upon admission to the College must make himself familiar with the following orders and in case of any breach of these orders the plea of ignorance will not be entertained

1 Students on arrival will report as follows —

All students of the Civil Engineer Class to the Personal Assistant to the Principal, other students, to the Superintendent of Overseer Class Hostels who will allot them quarters

2 Each student will be responsible for the state of the quarters allotted to him and will be charged for the repair of any damage which they may sustain beyond fair and unavoidable wear and tear Accidental injury or disrepair should be immediately brought to the notice of the Hostel Superintendent concerned with a view to its rectification All students must vacate College quarters during the long vacation

3 No visitors other than students of the class to which the occupier belongs are to enter students quarters without the sanction of the Personal Assistant to the Principal

4 Furniture at a nominal rent will as far as possible be provided for students of the Civil Engineer Class for use in the hostels and damage to the same will be [illegible] by the

Personal Assistant to the Principal Such furniture is not to be removed from the rooms, or used for any other purpose without permission Special furniture will be provided for the various camps Students of classes, other than the Civil Engineer Class, will make their own arrangements for furniture

5 All students have to engage their own servants and immediately upon appointment have to report the names of same on the correct form—obtainable from the College office—to the Personal Assistant to the Principal The Personal Assistant maintains a black list of servants and if any student has appointed a servant whose name is on the black list, the student will have to dismiss such servant at once and appoint another following the same procedure Without the Principal s sanction no unauthorized persons servants or guests will be permitted to reside in the hostels or servants quarters or to enter them after nightfall The wages of private servants must be paid by the 10th of each month following that for which they are due Students are required to take a receipt for every payment made by them to their servants whether such payments relate to wages or other accounts

6 All information regarding text books courses of study dates of examinations attendances etc will be found in the College Calendar and pamphlets of the courses of study and syllabi of the various classes

7 Students are reminded that this is a College for young men and not a school for boys Though all needful assistance will be given to those really anxious to work it is entirely on their own exertions that their success must depend, and in cases of failure they will only have themselves to blame They are however specially warned against idleness in their first year under the expectation that they can pick

up in the second or third. The course is so laid out, that continuous application is required the whole time. Students are reminded that if they fail to make sufficient progress in their studies, or fail to pay all College dues* on demand they are liable to be suspended or removed from the College at any time

The guardian of any student so suspended or removed will be held responsible for the payment of any debts whatsoever, which may have been contracted while the student was in the College Although every precaution is taken to prevent students from running into debt, the College authorities are in no way to be considered responsible for such debt

8 All students will attend the College regularly for studies at the hours laid down in the time tables and for outdoor duties at the times prescribed by the Officer in-charge of their class or their Professors, Lecturers or Instructors *No student may be absent from his quarters in the College lines without leave after 9 p m during the first term of any session and 10 p.m. during the second term of any session or before sunrise* The punishment for breaking this rule will be of *the severest description* *To enable the authorities to check* this rule no doors should be locked at the times specified

* NOTE —The words ' College Dues " include—

(i) College fee.

(ii) Rent and conservancy

(iii) Rent of College furniture

(iv) Electric light charges

(v) Recreation fund subscription and cost of articles purchased from recreation stores

(vi) All dues in connexion with Engineer Class Club

(vii) All dues of College Dairy, College shoe maker, College shop keeper, College tailor, College sweet seller and College stores.

(viii) All dues in connexion with common Civil Engineer class Mess

above Students are permitted to sleep immediately outside, and in front of, their quarters during the hot weather.

9 All smoking, spitting, whistling or making any loud noise in the College classrooms, lecture theatres, laboratories or corridors, etc is strictly prohibited Students should be careful to do nothing which may interrupt or distract others at work

10 No debts, other than College dues (see note under paragraph 7) are allowed to be contracted Students are strictly cautioned against all irregularities in money matters Flagrant cases which tend to bring discredit on the College, are liable to result in severe penalties being imposed upon offending students

11 All dues from students, recoverable by the College whether payable to Government or to private funds, persons or bodies, must for every month, be punctually discharged in full before the 21st of that month, failing which the students will be fined marks suspended or removed at the discretion of the Principal

12 The Principal and the Officers in charge of classes will always be glad to give any help and advice in their power, and students are earnestly requested to apply to one or the other in any case where they are in doubt as to the right course before taking action Students should consult the Officers in-charge of their classes for advice before referring the case to the Principal, see Order No 14

13 Any case of personal violence by one student to an other, or by a student to any other person, will be punished severely A student is never to take the law into his own hands, but is to report any grievance direct to the Officer in-charge of his class for enquiry

14 Students wishing to see the Principal should apply for permission through the Officer in charge of their class Direct application to the Principal is contrary to orders Petitions signed by a number of students are not allowed Any matter affecting a class or a number of students, should be brought to notice by the senior student concerned

15 Students are strongly recommended to take a fair amount of bodily exercise regularly, too much poring over books is very apt to muddle the brain and the active duties of the Engineering profession require a man to be as well trained physically as mentally to enable him to discharge them properly Marks are allotted for games etc

16 The Library is open daily at the hours specified in the Library rules Students are invited to avail themselves of it The periodicals and papers placed on the Reading Room tables for general use are not to be removed from the rooms Loud talking in the Library or Reading Rooms is strictly prohibited

17 Students are forbidden even though possessing a licence to bring firearms into their quarters Firearms may with the permission of the Principal be stored in the College armoury No student is to bring any firearms to the College without first obtaining the Principal s permission

18 Students may keep dogs but they must not be left loose if unattended Dogs must invariably be chained up at night All dogs must be registered and numbered in a register kept by the Personal Assistant to the Principal and must wear a collar and a special badge Any dog found within the lines without a collar and badge is liable to be shot The Personal Assistant will supply the necessary badges on payment These badges may be returned at any time when not needed, and payment will be refunded

30 Students are not allowed to be members of outside societies, nor are they allowed to join in discussions on public matters except such as are organized by the Officers in charge of their class

31 Students are expressly forbidden to approach examiners, whether internal or external, with enquiries concerning marks, either prior to or subsequent to publication After publication should any student think some error has been made he is to submit an application in writing to the Principal on the matter through the Officer in charge of his class Any student not observing this rule will be punished severely, probably with expulsion

32 Students will not be permitted to appear for any external examination during their College course except to complete a university examination incompleted through sickness prior to their admission

33 The attendance of all students at the annual College Sports and Regatta is compulsory

34 There are the following shops generally on the College Estate —

(i) Banya's, (ii) Tailor s (iii) Shoemaker's, (iv) Sweetmeat seller's as well as a General stores, Bakery, Aerated water, Dairy These have been established for the benefit of the students and under the strict supervision of the College authorities Students are requested, in their own interests, to patronise these in preference to others

Leave.

35 (i) No student is allowed to leave the station* without first obtaining written sanction of the Officer-in charge of his class Requests for leave must be made to these officers who

* NOTE—For purposes of this order Saharanpur and Lhaksar may be taken as within the station

will, at their discretion, grant such leave as is covered by College non working days or holidays In all other cases, these officers will submit these requests to the Principal with their recommendations

If the leave is sanctioned the Officer in charge of the class will hand over to the student concerned two copies of the permit to leave the station with orders to give one copy *personally* to his Hostel Superintendent and to hand in the other at the College Office before proceeding on leave

On return from leave the student will report in writing to his Hostel Superintendent the date and time of his arrival The Hostel Superintendent will send this information to the Officer in-charge of the class making any remarks that he may think to be necessary

In ordinary circumstances all requests for leave must be submitted before noon on the day prior to that on which leave is required All requests for leave which are not submitted in the prescribed period will be sanctioned or recommended by the Officer in charge of the class as the case may be in very special circumstances regarding which the student has produced cogent reasons

35 (ii) When the period of leave required includes any College class attendance periods or College functions at which the attendance of a student is compulsory the student before approaching the Officer in charge of his class for the leave must obtain permission of the members of the staff concerned with the particular periods or compulsory College function in writing and this must be shown to the Officer in charge of the class before the request is made

35 (iii) Students are warned that absence without leave is a serious breach of rules At the commencement of any College attendance period the senior student present will at once report to the member of the staff taking such period the absence or sickness of any student

35 (iv) To obtain leave and proceed on short leave, and then to ask for an extension *except on the most urgent grounds* is a practice considered highly objectionable in Government service and the College authorities take the same view The mere dispatch of an application for extension is no excuse for failure to return on the proper date A sanction to the extension by the Principal is necessary and to obtain this each application should be accompanied by a stamped addressed envelope and all telegrams are to be prepaid These should be dispatched to the Principal early enough for the applicant to receive a reply in time *If no reply is received the application for extension should be considered as refused* Students who being on leave fail to return to the College on the day on which the leave expires without receiving sanction to an extension will be considered guilty of disobedience of orders and will be punished accordingly

35 (v) Students are not required to apply for leave to enjoy sanctioned holidays in the Station or for the Vacation out of the Station No leave will be given to attend the weddings of relatives

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Sickness

36 (i) The College Hospital Compounder will attend at the College Hospital daily throughout the year from 7 a m to 12 noon and in addition from 5 p m to 6 p m

The College Medical Officer as soon as possible after his hours of attendance will submit his daily sick reports as follows —

(i) One to the Principal reporting *all* who are sick

(ii) One to the Officer in charge of the Civil Engineer class reporting only those Civil Engineer students who are sick

(iii) One to the Headmaster Overseer class reporting only those Overseer class students who are sick

(iv) One to the Officer in charge Physical training when the same is going on including only names of Civil Engineer and Overseer class students who are sick or are exempted from Physica training

36 (ii) (*a*) All students who require medical attendance are to present themselves at the College Hospital during the hours of attendance of the College Medical Officer

(*b*) Those who are too ill to attend personally are to send notice to the College Medical Officer at the College Hospital during his hours of attendance when the Medical Officer will visit them at their quarters

(*c*) Those who fall ill either before or after the hours of attendance of the College Medical Officer are to report themselves to the College Hospital and to see the Compounder They are then to carry out the instructions given them by the Compounder who is to report all such cases to the Medical Officer when next in attendance The Medical Officer will keep in attendance at the College Hospital a peon at all hours when the Compounder is not present whose duty it will be to call the Compounder from his quarters

(*d*) If a student be compelled to absent himself from class attendance on account of illness or if during College h

obtains permission to leave for the same reason, he is to report at once to the College Hospital [*vide* section (*c*) above].

(*e*) In really serious cases the students will send notice to the College Hospital and it will be the duty of the Compounder to at once send for the Medical Officer, and when the Compounder is off duty, he is to arrange for a peon to be left at the College Hospital, who can either call the Compounder or the Medical Officer, as the case may be. The Medical Officer's address is the Roorkee Civil Hospital.

36 (iii). A student placed on the sick list will remain on the sick list till taken off by the Medical Officer. He will report daily at the Hospital at the specified hour while on the sick list, unless specially exempted by that Officer. Students on the sick list excused from work or attendance at College are not permitted to leave their quarters, except for medical purposes, without the written authority of the Medical Officer, initialed by the Principal On the written application of the Medical Officer, the Personal Assistant to the Principal is authorized to erect a necessary tent near the quarters of any sick student

36 (iv). Students who have been frequently sick during the year will lose marks for physical fitness

36 (v). All Indian servants belonging to the College or to students, who require medical treatment, should attend at the Hospital during the authorized hours.

36 (vi). No student may be treated privately All cases of sickness must be reported and entered on the Sick report. Any student concealing a case of sickness will be severely punished.

36 (vii). The College Medical Officer will visit the hostels, cook-houses, latrines and grounds once a week, as also the

dairy and shops, to see that the sanitary arrangements, etc. are properly carried out, and will send a report every Monday morning to the Principal concerning any defects he may observe, or any improvements that he may wish to suggest

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Examinations.

37 (i) *The work given in by students at examinations, projects or at any time during the course, is accepted as their own honest and unaided work*, any attempt to deceive the Staff about it in any way whatever will on detection, be punished by immediate expulsion No excuse whatever will be accepted

37 (ii) Any student not present at any examination from whatever cause will lose all marks for the same

37 (iii) Appraising the answers to an examination is a very tedious and difficult matter, and each slovenly set of answers wastes time and temper, and causes all to suffer The following rules which are really in favour of good honest and neat work will be strictly enforced and marks deducted in each case in which they are infringed or not acted up to —

a) Carefully read and minutely adhere to the instructions printed on the cover of the answer books issued to students These instructions are as follows —

(i) Number your answers to correspond with the numbers of the questions and if the question is divided into sub heads be careful to number these

(ii) No part of this book is to be torn off

(iii) The whole of the work including all rough work, is to be written in this book

(iv) No writing whatever is allowed on any other paper, except squared paper when required for an answer Each sheet of squared paper must be headed as required under regulation (A) or (B) of the answer book

(v) The paper should be ruled or folded so as to make a margin on the left hand side

(vi) The handwriting should be distinct

(vii) Both sides of the paper are to be written upon A margin should be left for rough work

(viii) In the event of this book becoming filled up another book must be used and the number used written below There is a tendency amongst students to waste their own and the examiner's time by writing unnecessarily lengthy answers by needless repetition and by using a large number of answer books It should seldom be necessary to use more than one answer book All answers should be as concise as possible and if sufficient thought is exercised before the answer is committed to paper all repetition can be avoided Careless and lengthy answers will entail a loss of marks

(ix) These books are not to be folded but forwarded flat and if more than one book is used by the same student the second and succeeding books must be *tagged with the first*

(x) Students with roll numbers using this book are not to make any allusion to their names or *initials or to make any marks by which they* may be identified

(xi) The index on the inside of the cover of this book must be carefully filled in Students must fill in against each question attempted the word "answered" In the case of questions having separate parts (a), (b), (c), each separate part attempted should be indexed as "answered" Nothing should be entered against questions which have not been attempted

(b) In sessional and final examinations each student will be given a roll number to use instead of his name This must be written in the right hand top corner of the cover of *each* book The number of each question must be written in the margin of each page

(c) The examiner will mark under three heads —

(i) Knowledge of the subject

(ii) Accuracy in working

(iii) Clearness of working and expression

If the student fails in (c) (iii) even though perfect in (c) (i) and (ii) he will lose marks He is bound to show clearly how he obtained his results and the examiner has no time to waste marking slovenly work or roundabout methods

Take a mathematical examination for example —

(i) Each process should be headed with a word or two of explanation

(ii) All work having to be done in the book each step of calculation that cannot be done in the head must be done on the margin

(iii) All work known to be useless must be scored out

(iv) The answer must be plainly marked Write the word "answer" opposite the answer in each case thus Ans — "

(d) Students must bring their own pens inks, pencils and drawing instruments The use of slid rules may be permitted at the discretion of the examiner No borrowing from each other is allowed during an examination

(e) No books or papers of any sort are to be brought into the examination room Logarithm tables graph and drawing paper when necessary will be provided

(f) No student may leave his seat for any reason except to quit the room After having once left the room for any reason whatever he cannot return A student wanting another book will call an attendant who will bring it to him

(g) When time is up the examiner will call out 'cease writing after which order pen must not be put to paper for any purpose whatever

(h) The use of red ink or of coloured pencils should be avoided as far as possible as the examiner usually makes corrections in coloured pencil

Project Regulations (including Tours

Notes for the guidance of students in drawing up Projects

38 (i) *The collaboration of students during Projects is forbidden, and in this connexion attention is expressly drawn to Standing Order No 37 (i), and to the penalty for its infringement It must be remembered that Projects are competitive examinations subject to the ordinary examination rules Students are warned that they are allowed to obtain assistance solely from (a) technical books in general, (b) plans and models in the Model Room and Library, and (c) plans of any*

existing engineering work, which they may obtain from a source which is equally open to other students of their year *

It is forbidden to obtain survey maps or level charts from outside sources, or any assistance in designing or calculating from outside the College Students are not permitted to obtain previous engineering projects executed by past students for the purpose of assisting them in their work Finally, in the absence of specific project regulations, the best guide to a student's conduct is his own sense of honour

38 (ii) A project is expected to be a piece of work such that a senior officer can examine criticize, pass orders on it, and hand it over for execution To ensure this result it must be complete in every sense It must include a clear concise report with *cross references* to all drawings, a survey which can be checked with ease and celerity, and drawings from which work or working drawings can be produced and from which the estimate can be checked The drawings must be neat but should have no unnecessary elaboration Calculations should be given for all important structural items A student must carefully think out his work Having gone over the ground he should scheme out his survey To ensure that he has time to submit all necessary work, all work in the field must be done neatly and methodically

38 (iii) Having completed the field work the student is required to complete his project in the College Work on drawings in quarters is not permitted but this does not prevent a student from thinking out his designs, and making sketches and calculations in his spare time He must again map out a methodical scheme if he is to submit a complete project Every drawing should be numbered, with a heading

* Vide Standing Order No [illegible] plans etc should in [illegible] case be shown to the Professor of Civil Engineering

showing what it represents A scale should be shown on each drawing and sufficient dimensions should be given both for the estimate and for actual work References to conventional signs need only be shown on one sheet for the whole project

38 (iv) Above all the student should endeavour to show a sense of proportion as regards the relative importance of the various portions of his work The whole of such details as galvanized or tiled roofs railings gateways etc should be drawn sufficiently to show the style proposed All calculations for applied mechanics should be fastened together and full references given in the text to all drawings All details necessary to check the calculations should be given All calculations referring to a particular design should run concurrently and be prefaced by a clear statement of the data connected with that design No calculations should be shown on the drawings but magnitudes of the forces represented should be clearly shown No marks will be allotted for applied mechanics drawings which are not accompanied by calculations in the report The important details in drawing the finished survey, estimate calculations and report should all be completed first Cross references and headings should be carefully given so that it may be easy to follow from the report or estimate to what reference is being made Any le sure time can then if desired, be devoted to type drawings of well known details and to generally beautifying cleaning and elaborating the drawings The cleaning of drawings by servants or menials is forbidden

38 (v) The senior student is responsible for the discipline of the camp He will at once report any authenticated case of a breach of the camp regulations and pending the arrival of

instructions from the Officer in charge of the class, he is em powered to issue such instructions to students or to khalasies as he may consider necessary

38 (vi) Until a student has finally completed his field work in camp he is not permitted to visit Roorkee unless specially authorized to do so by the Officer in charge of the class If a student on account of absolutely imperative circumstances desires to visit Roorkee on leave from the project camp, he must submit a written application on a leave application form for leave at least 24 hours before he desires to quit the camp and he is not authorized to proceed on leave until he has received the necessary permission Such leave will only be granted in very exceptional cases and on receipt of conclusive evidence that it is absolutely necessary

38 (vii) Students in camp are not compelled to work on Sundays or on general College holidays but they are allowed to do so No extension of time in camp or in College will be given to such students as observe these holidays

38 (viii) No work, however, is permitted in the College rooms on Sundays after the return from camp though such days may be utilized for work which is permitted in quarters

38 (ix) All students while in camp are to keep a diary showing each day the hour of leaving camp and the hour of return the nature and extent of the survey or other work executed giving the names of any villages or other prominent points visited and any other concise information useful to an examiner in checking the progress of the work *The diary must always be on the person of the student* so that it can be produced at once when demanded and it must be kept up to date and must be written in ink

38 (x) Students should leave camp for work not later than 8 0 a m daily

38 (xi) Every endeavour should be made to avoid giving offence to villagers near the camp or elsewhere by needless destruction of crops or by other damage Pea fowl must not be shot without permission of the local villagers

38 (xii) Every camping ground is to be kept clean The second senior student will be responsible for the supervision of sanitation under the direction of the senior student Paper etc must not be left lying about Fires are not to be lighted inside the limits of the camp or near tents Tins of oil are not to be kept in Government tents Lamps must not be placed on tables where there is a danger of the tent catching fire Before a storm all lamps must be extinguished

38 (xiii) Necessary tents should be located on the side of the camp away from the direction from which the prevailing wind blows and should be if possible 100 yards or more from the camp

38 (xiv) The purity of the water supply for drinking and cooking should be carefully ensured Drinking water should be boiled before use The washing of clothes should not be permitted near a well from which the supply of drinking water is drawn and in the case of stream the washing of clothes must take place down stream of the drinking water site

38 (xv) After return to the College all students have to work in the College on the preparation of the project during the hours ordered from time to time Permission for exemption has to be obtained from the Officer in charge of the class

38 (xvi) Students will be responsible for their drawings and original survey records which are on no account to be taken to their quarters but which must be kept filed in their classroom in the almirahs set aside for this purpose The issuing officer will stamp all paper issued and on each sheet

the student to whom it is issued must immediately enter his roll number

38 (xvii). Government tents are classified as follows —

E P tents to accommodate four students	Class I
Semi Swiss Cottage, large, two students	Class II.
,, ,, ,, small, one student	Class III

Shuldaries, large to accommodate not less than 15 khalassies

Shuldaries small to accommodate not less than 8 khalassies

As the majority of the class consists of Indians, they will be accommodated in batches of 4 in each E P tent If there are 3 Mohamedans they will occupy one E P tent but 2 Mohamedans will be accommodated in a Class II tent

For example if the class consists of —

Case I—13 Hindus and 3 Mohamedans Then the tents will be allotted as follows —3 tents Class I 1 tent Class III for the Hindus and 1 tent Class I for the Mohamedan

Case II —14 Hindus and 2 Mohamedans 3 tents Class I and 2 tents Class II

In the case of Europeans tents of Classes II and III will be available according to the above scale

There will be one E P tent with drugget for the Engineer Class Club and one single pole tent each with drugget for the European and Mohammedan messes provided that each has three or more members

Necessary tents are for Indians only

Furniture —Each student will be allowed 1 bed 1 mattress 1 folding chair and 1 folding table (the latter two being camp furniture) Club and Mess tents will have collapsible tables

38 (xviii) Two dak coolies for the camp one of whom will report daily to the senior student will be allowed

provided the camp is within a 15 mile limit, and three dak oolies for a 20 mile limit

38 (xix) *An allowance of Re 1 per mile for the survey* is sanctioned to each student for the cost of flags, pegs etc subject to a maximum of Rs 10 No other contingent charges are admissible and this also includes such items as stationery, portfolios etc

38 (xx) Students who are unable to finance themselves can on applying in writing to the Principal, receive an advance up to Rs 50 for payment to khalassies This sum will be deducted from the total of the bill on the close of the project The success with which students manage their coolies and make their camping arrangements will be considered *in awarding marks for 'Fitness for Department'*

38 (xxi) Instruments as required will be issued to each student each instrument bearing the class number of the student The student will be personally responsible for these instruments being in adjustment and in good working order Any damage sustained will be made good by the student and he will not be permitted to exchange his instrument or stand with another student and no student will be permitted to lend out his instrument The damaged instrument with a report must be sent immediately to headquarters

Students will always accompany their khalassies proceeding *to and returning* from work In inclement weather instruments should be put away in their boxes and the boxes protected from rain, sun and dust When an instrument is kept standing for some time in the sun, the cloth bag should be placed over it *for protection Level staves should be clamped* together when not in use, and they should not be leant against walls and trees but placed horizontally on the ground and protected from dew rain and white ants

38 (xxii) Except level staves plane table stands and chains no instrument should be carried on carts The khalassies *must* be utilized for conveying such instruments to the field and back to headquarters Plane tables may be placed face to face and taken in a spring cart, but this only when the student himself is travelling with them

38 (xxiii) The boundaries of all fields must be surveyed provided they come within the specified limits of the alignment submerged area etc Village boundaries must also be defined these are usually shown on the guide map or index map issued Traverse work and triangulation must be based on true north and the magnetic variation at the time should be clearly noted on each map and drawing Every use should be made of embedded stones plinths of building etc as bench marks in levelling even if such objects are to some extent without the limits of the work

38 (xxiv) Plane table sections note books etc must have the roll number of the students clearly written on them All plane table sections and records must be kept up to date in ink and index and cross reference work should be made in the field Level and traverse field books must be recorded in ink in the field

38 (xxv) If a chain be used the chain should be checked daily and the chain error noted in the field book Levels should be tested for adjustment daily

38 (xxvi) All calculations for curves azimuths etc should be contained in the survey note book

38 (xxvii) Students will see that as little damage as possible is inflicted on standing crops and if chaining be necessary through such crops the chain should be lifted not *dragged* from arrow to arrow The instrument should be set up as near as possible to the line of demarcation between fields to avoid repeated trampling down of wheat grain etc

38 (xxviii) Khalassies will be enlisted at Roorkee, and they will be entitled ordinarily to one day's leave per week, if the project be within 12 miles of Roorkee, or two days in a fortnight if beyond this limit The day or days for leave is one for the student to arrange Khalassies will receive pay at the prevailing rates for labour and tindals (one per squad of 4 men) will, if recommended, receive pay at the rate of Re 1 extra per mensem Each khalassie can obtain a record sheet which will entitle him to prior claim for enlistment for both the triangulation and project camps A tindal on a higher rate of pay loses claim to the extra allowance if he absents himself from any of the above camps Khalassies will after engagement, receive an advance of Rs 2 and will after the advance has been paid, work in arrears of pay and obtain other advances against the final payment A student engaged on independent work will, if circumstances allow have a squad of 4 men He will not be permitted to work with more

38 (xxix) Civil Engineer and Overseer class students of the Thomason College of Civil Engineering Roorkee, when proceeding on tours in connexion with project work or to visit works of interests, are entitled to travelling allowance at the following rates —

A—Civil Engineer class students—

(i) Railway fare at single intermediate concessional rates applicable to students travelling in parties, and when such rates are not available then a single intermediate class fare for each student

(ii) Actual expenses for road journeys to the limit of mileage allowance admissible to officers of third class, viz annas two per mile

(iii) Annas fourteen per night per student if detained in a town while on tour

(iv) Single third class railway fare for rail journeys and one anna per mile for road journeys for each servant at the rate of one servant for every five students and subject to a limit of four servants for a party of over 15 students

B—Overseer class students—

(i) Single fare of the third class for journeys by rail and one anna per mile for journeys by road

(ii) Daily allowance at the rate of eight annas for halts outside headquarters

Students when not accompanied by a member of the College staff will be under the charge of the senior student

Workshop Rules

39 (i) Every student attending the Workshop course will be allotted a special number On entering the shop he will be given a corresponding ticket He will make the ticket over to the Foreman Instructor when taking his tools and receive it back when he has returned them correct at the close of the period Upon completion of the period each student will check with and hand over to the Foreman all tools When leaving the Workshops each student will give up his ticket at the gate

39 (ii) Breakages and injuries to tools machines and Government property generally must in all cases be reported at once to the Lecturer in charge

39 (iii) Materials for instructional work will be issued to students by the Foreman with instructions regarding the work to be done On completion of the work it must be shown to the Lecturer and approved before a more advanced exercise can be given

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39 (ii) Breakages and injuries to tools machines and Government property generally must in all cases be reported at once to the Lecturer in charge

39 (iii) Materials for instructional work will be issued to students by the Foreman with instructions regarding the work to be done On completion of the work it must be shown to the Lecturer and approved before a more advanced exercise can be given

39 (iv) Students are prohibited from working on any machine, unless especially authorized in this respect by the Lecturer in charge or the Foreman of the shop

39 (v) Loose clothing and *puggries* may not be worn in the Workshops

39 (vi) Students must not enter any shop other than that in which their class is working without permission from the Lecturer in charge

Rules regarding student s independent work in the College Workshops

39 (vii) Every student wishing to do private work must first show to the Assistant Professor in charge a fully dimensioned sketch of the article he wishes to make If sanctioned by the Assistant Professor, the job will be given a workshop number and material issued for it

39 (viii) All articles being made, and the materials issued, must on no account be removed from the Workshop by students, but must be left in charge of the Shop Foreman, when any article is complete it must be handed over to the Assistant Professor and if satisfactory after examination by him it will be issued to the student who made it

39 (ix) Private work must not be done during hours allotted to Workshop Practice

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Laboratory Rules

General

40 (i) The greatest care must be taken in handling and using all apparatus any breakage or damage which occurs must be reported at once to the Professor or Lecturer Any damage or loss resulting from carelessness will be charged to the student or students responsible for it

40 (ii) After finishing any experiment, the student or students must replace in their proper positions all parts of the

apparatus and reagent bottles used The whole apparatus is to be replaced in its case if there be one When using boxes of weights especial attention is drawn to this rule

40 (iii) When working the benches, etc must be kept as clean as possible, students being careful to avoid any unnecessary dirt or mess

40 (iv) Students must enter in a laboratory note book, especially kept for the purpose, details of each experiment performed by them during or immediately after its completion Such rough notes must be recopied kept up to date and be always ready for inspection when required In the Physical and Electrical Laboratories after finishing an experiment students must mark it off on the form put up in the laboratory for the purpose

40 (v) Students must do all experimental work entirely independently all necessary explanations etc will be given by the Professor or Lecturer Consultation between students is strictly forbidden during experimental work except when two or more students are ordered to conduct an experiment together

40 (vi) All apparatus chemicals etc are supplied free to students, but any breakage or damage will be charged to the student or students responsible for it

Chemical Laboratory Rules

40 (vii) Each student must provide himself with a rough note book a piece of platinum wire a duster padlock and key and a copy of each of the prescribed text books Keys of the padlocks should be labelled and left with the Lecturer

40 (viii) Students should be careful not to waste chemicals, either by spilling them about or by using unnecessarily large quantities

40 (ix) All experiments giving rise to poisonous or obnoxious fumes must be performed in the fume chambers

40 (x) Students are advised when heating either solids or liquids in test tubes, to direct the mouths of the tubes towards the reagent shelves in order to prevent any accident occurring to their neighbours

40 (xi) Students are on no account to touch the switches regulating the ventilation of the fume chambers

Laboratory Balance Room Rules

40 (xii) Students when weighing, should always place the article to be weighed on the scale pan on the *left* hand side of the balance and the weights on the *right* hand side

40 (xiii) Chemicals are on no account to be placed directly upon the scale pans Chemicals to be weighed should be either put upon a watch glass or placed in a weighing bottle Everything to be weighed should be *scrupulously clean and perfectly dry*

40 (xiv) When weighing the balance pans should be *slowly* and *carefully* released The weights are *never* to be placed upon the scale pan while the balance pans are free to swing

40 (xv) The weights are *on no account* to be touched with the fingers but should be removed by means of the callipers furnished with each box of weights

40 (xvi) During the process of weighing the weights are to be removed one by one from the weight box and *carefully* placed upon the balance pan Weights must not be placed upon the top of each other

40 (xvii) Check the result of each weighing by adding together the weights removed from the weight box, then carefully remove weights from the balance pan

40 (xviii) All results must be carefully recorded in a note book and not on scraps of paper which are liable to be lost

40 (xix) Students, when they have finished weighing, should remove the rider from the beam of the balance, see that the balance pans are not free to swing, close the balance, replace the balance cover, and see that all the weights are correctly placed in the weight box

40 (xx) Hot crucibles are *on no account* to be put upon the balance pans Crucibles should be allowed to cool in a desiccator

40 (xxi) Apparatus should *not* be left upon the balance tables

40 (xxii) Should any of the balances be defective, the matter should be reported *at once* to the Professor or Lecturer.

Engineering Laboratory Rules

40 (xxiii) The accuracy of the machines and instruments depending chiefly upon their correct adjustment, students are forbidden to tamper with them in any way

40 (xxiv) Steam valves must never be opened except in the presence of a member of the staff Serious accidents have happened in the past through non observance of this rule

40 (xxv) Reports of tests will be submitted on the day following that on which the tests were made The report with any corrections will be returned to the student after checking on the student's next attendance at the laboratory

Survey Laboratory Rules

40 (xxvi) The greatest care must be taken in handling and using all survey instruments Any breakage or damage which occurs must be reported at once to the Assistant Professor or Lecturer A student is personally responsible for any instrument issued to him and when kept by him in his quarters he should see that it is put in a safe place and not where it is likely to be knocked over by his servant in cleaning the room No instrument should be left unattended in the field In going to or returning from work in the field *students (except Civil*

Engineer Class, 3rd Year) must, on no account, hand their instruments over to servants to carry Any damage done to an instrument must be made good by the student to whom the instrument was issued, and, in the case where students are working in parties the cost will be divided among the members of the party, unless it can be shown clearly that one or other of the party was directly responsible for the damage done In addition to having to pay for the damage caused, the student or students will have marks deducted either from their "Fitness for department" or ' Survey" groups or from both

College office

41 (i) Students are strictly prohibited from entering the College office rooms Any work which they may have with the office should be transacted over the counters

41 (ii) A bill for all College dues will be sent to all the students before the time fixed for payment of such dues every month

41 (iii) All payments must be made by students in person at the counter of the College Treasury between the hours of 11 a m to 3 p m on the days as may be ordered

Cheques on listed banks in payment of dues will be accepted in the case of dues from October to May provided cashing charges are included Dues for June and July must be paid in cash

The College cashier will grant a receipt for the amount paid

As far as possible the students must bring the exact amount due, to avoid any delay in transaction at the counter

Central Library Rules

General

42 (i) The Library is maintained for the use of the Staff and students of the College It is also available to

Gazetted Government officers resident in Roorkee, and, under restrictions, to the general public resident in Roorkee Books are issued for reference purposes and on loan in accordance with these rules

42 (ii) Certain works of reference can only be consulted in the Library and Reading rooms, and may not be removed from these rooms without the sanction of the Principal

42 (iii) No book will be issued on loan from the Library until a signed receipt for the same has been handed to the Librarian, this receipt will be returned when the book is given back

42 (iv) Books are liable to be recalled at any time by the Librarian A new book may only be kept for 7 days The term 'new book is one which has been received within six months of the date of issue

42 (v) The transfer of books on loan to any other person is prohibited

42 (vi) **Persons making use of the Library are forbidden to remove books from the shelves** The Librarian on being informed of its catalogue number will supply any book required

42 (vii) The Library will be closed annually to the issue of books from approximately July 5 to 15 All books out on loan must be returned not later than July 5

42 (viii) Persons damaging or losing books will be charged with the full value of the same The practice of marking or scribbling in books is strictly prohibited

42 (ix) Persons infringing any Library rules are liable to be denied the use of the Library

42 (x) The Library is open daily during the College session Sundays and holidays excepted for the issue and return of books from 11 a m to 3 p m *During the vacation it is*

open on Thursdays only from 9 a m to 11 a m The Reading-rooms are open daily during the College session from 8 a m to 4 p m , except on Sundays and holidays

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SPECIAL

College Educational Staff

42 (xi) A *special* issue of books for departmental use for periods not longer than one session is allowable to Professors and Heads of College departments, provided the number so issued to any one department does not exceed twenty at any one time Such a special issue will require the sanction of the Principal Normally, in order that students should be *able to consult* any *technical book*, *such books*, if *taken out* by any member of the Staff, should be *returned within one month*, except as in Rule 42 (iv) If the Professor is of opinion, when he takes out the book, that he will require *the use of it for longer than one month, he should put up an* indent for a duplicate copy for the Central Library (charge able to his laboratory grant) within one week of the issue of *the book*

42 (xii) All members of the Educational Staff are *en titled to keep books on loan to a limit of eight volumes*

42 (xiii) Applications for works already on loan will be registered by the Librarian and on return will be issued to the applicants in order of priority

42 (xiv) The members of the Educational Staff are ex empted from Rule 42 (vi) and are permitted to remove books from the shelves, but not from the Library without signing the usual form and depositing same with the Librarian

Students

42 (xv) Text-books on sale at the Book Depot will not be issued to students

42 (xvi) Students are not permitted to retain any book for a period longer than 14 days except as in Rule 42 (iv) and 42 (xx) Re issues of any book after it has been returned will not be made to the same borrower until after the lapse of 7 days Students are entitled to keep books on loan up to the limits for the different classes given below but no book may be retained for a period longer than 14 days

Engineer class	5 vols
Overseer class and Draftsman class	3 vols

42 (xvii) Rule 42 (xiii) is also applicable to students for scientific works

42 (xviii) For the vacation books may be issued to students up to a limit of 3 only with the sanction of the Principal

42 (xix) Students borrowing books containing plates must personally check the number of plates and enter the actual number on the receipt The plates are to be checked again when the book is returned Books returned one day will not be re issued til 3 clear days have elapsed except as in Rule 42 (xx) In order to obtain and return books students must attend in person

42 (xx) Students of all classes working on projects may only borrow 3 volumes at a time and are allowed to keep the same for 3 clear days only Books returned one day may not be issued before the following day to these students

Residents

42 (xxi) Members of the general public resident in Roorkee may with the approval of the Principal borrow books The applications of non-commissioned officers and others stationed in Roorkee should be submitted to the Principal through their Commanding Officer

open on Thursdays only from 9 a m to 11 a m The Reading-rooms are open daily during the College session from 8 a m to 4 p m , except on Sundays and holidays

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SPECIAL

College Educational Staff

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42 (xx) Students of all classes working on projects may only borrow 3 volumes at a time and are allowed to keep the same for 3 clear days only Books returned one day may not be issued before the following day to these students

Residents

42 (xxi) Members of the general public resident in Roorkee may, with the approval of the Principal borrow books The applications of non commissioned officers and soldiers stationed in Roorkee should be submitted to the Principal through their Commanding Officer

42 (xxii) All residents of Roorkee entitled to use the Library under any of these rules may keep books on loan up to a limit of *six volumes*, no book being retained for a longer period than one month, except as in Rule 42 (iv)

42 (xxiii). Residents about to leave the station, even for a short period, must return all Library books

42 (xxiv) The term "Members of the general public resident in Roorkee" means a head of a family, and the term includes his family but not as separate residents

Non residents

42 (xxv) The Library, excluding works of fiction, is available to gazetted Government officers and other out station residents, in special cases, on application to the Principal, at whose discretion a deposit may be required to cover the full value of the books borrowed

42 (xxvi) Those permitted to use the Library under Rule 42 (xxv) may keep books on loan up to a limit of six volumes, no book being retained for a longer period than two months. The cost of packing and carriage by registered post both ways being defrayed by the borrower No "new book" will be issued

Thomasonian Society.

43 (i) The aim is to cultivate the faculty of exact expression in speech and to provide for rational discussion of *scientific, technical engineering, literary and social subjects*

Also to arrange lectures on subjects of general interest by members of the College Staff or outsiders.

43 (ii) There shall be no admission fee or subscription of any kind

All members of the Staff and students of the Civil Engineer class shall be members *ipso facto*

43 (iii) The Principal will nominate every session a member of the Staff to be the President, who in consultation with the Principal shall have full control over the activities of the Society

43 (iv) The students will elect a Secretary at a general meeting to be held after the mid sessional examination every year He will keep a record of the activities of the Society and issue notices, with the approval of the President, for the various meetings

43 (v) A Vice President will be elected from among the 2nd year students at a general meeting to be held after the mid sessional examination every year He will assist the President and in his absence preside at meetings

43 (vi) The Secretary will arrange meetings with the approval of the President At least fourteen days' notice should be given of each meeting

43 (vii) The debates shall be held in the premises of the Civil Engineer Class Students Club

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Rules for the management of the College Magazine

44 (i) The magazine will be called "The Lion, Thomason College Magazine" It will be under the control of a senior member of the Staff who will be called the "Director", and who will be appointed by the Principal every session

44 (ii) The Director will supervise its publication and control its finances

44 (iii) An Editor and an Assistant Editor will be appointed annually before the College vacation by the Director in consultation with the Principal The Editor may be either of the 2nd or 3rd year Civil Engineer Class, and the Assistant Editor will be an Overseer Class student of the 1st or 2nd year

44 (iv) The new Editor and Assistant Editor will take up their duties with the second issue of the session following their appointment The names of the new Editor and Assistant Editor will be announced in the first issue of the session following their appointment

44 (v) There will be as many issues during the session as possible (up to a maximum of 5), depending on articles submitted and if funds permit

44 (vi) A compulsory subscription of annas four per mensem for each of the 9 months of each session from each Civil Engineer class student and each Overseer class student.

The above subscription will entitle each person named to one copy of each issue of the magazine Should any wish to purchase extra copies they may do so, if there are sufficient copies, at Re 1 2 per copy

44 (vii) The magazine will be kept on record in bound volumes in the College Library and in the Students' Clubs

44 (viii) From time to time copies of the magazine may *be sent to distinguished old alumni of the College and to* certain institutions for purposes of exchange A list of these will be sent to the College Office at the beginning of each session The College Office will distribute the magazine to the subscribers

44 (ix) Writers of articles will be entitled to receive one extra copy free of charge More copies will be supplied to them on payment of actual cost

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College dairy.

45 All students are to obtain milk and butter from the College Dairy and from no other source This Dairy is maintained for the good of their health and students are earnestly requested to see that their servants do not supply milk or butter from outside sources, and by this means endanger the health and even risk the lives of students Any servant detected supplying milk or butter to students from outside sources will be expelled from the College Estate, and students will be held responsible that their servants are informed of this fact Butter and milk will be paid for through the Dairy bills

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Subscriptions to athletics and games.

46 *Students of the Civil Engineer and Overseer classes* have to pay the following donations and subscriptions —

(a) Civil Engineer Class

Compulsory Entrance fees

Civil Engineer Class Recreation Sports and Regatta fund Rs 15 upon first joining from each student

Subscriptions

Civil Engineer Class Recreation Sports and Regatta fund Rs 7 per mensem for each of the 9 months of each session from each Civil Engineer Class student

(b) Overseer Class

Compulsory Entrance fees

Club and Recreation Fund Rs 3 upon first joining the College

Subscriptions

Club, Recreation and Boating Fund Rs 5 per mensem from each Overseer class student for each of the 9 months of each session of which Rs 3 will be credited to the Club and Recreation Fund and Rs 2 to the Boating Fund

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Rules of Civil Engineer Class Students' Club

47 (i) No person other than students of the Civil Engineer class shall be eligible for ordinary membership Each Civil Engineer class student is compelled to join, and will have to abide by the rules and regulations in force at the time, or as may be altered thereafter A member guilty of a breach of the rules or of conduct unbecoming a member of the Club may be debarred from enjoyment of the Club privileges to the extent approved by the Principal on the recommendations of the President and the Executive Committee

All qualified ex students may be invited to become honorary members of the Club, with the consent of the Principal

47 (ii) At the beginning of each session the Principal will nominate either himself or a member of the Senior Staff as President of the Club and another member of the Staff as Vice President

All affairs of the Club will be managed by an Executive Committee, the Chairman of which will be nominated by the Principal from among the 3rd year students, and eight

honorary secretaries elected at a general meeting of the Club in the manner indicated below —

Secretary	Elected from	When elected
(*a*) General Secretary (*b*) News Secretary (*c*) Furniture Secretary (*d*) Garden Secretary	Elected from 2nd* year class members.	Elected at the close of the previous College session
(*e*) Billiards and Lighting Secretary (*f*) Music Secretary	Elected from 2nd or 3rd* year class members	
(*g*) Indoor Games Secretary	Elected from 1st year class members	Elected as soon as possible after commencement of the College session
(*h*) Refreshment Secretary	Elected from any of the three classes	

A general meeting shall be called before the close of a College session to elect secretaries (*a*), (*b*), (*c*), (*d*), (*e*) and (*f*) for the ensuing College session The new secretaries will take over charge of their respective duties from the retiring secretaries together with the account books and all connected papers before the College vacation commences and report their having done so to the Vice-President

Before the College vacation commences the retiring secretaries (*g*) and (*h*) shall hand over charge to the general secretary for the ensuing College session appointed at the General Meeting together with all account books and all connected papers and report their having done so to the Vice President

A general meeting shall be called as soon as possible after the commencement of a College session to elect secretaries (*g*) and (*h*) and to these newly elected secretaries (*g*) and (*h*) the General Secretary will hand over all the account books and connected papers which have been in his custody during the College vacation without delay and report his having done so to the Vice-President

* Denotes those members who will become 2nd and 3rd year members during the immediately ensuing College session.

47 (iii) The Club reserves the right to enforce an office on a member of the 2nd year class at an election for this purpose, whenever an emergency arises for so doing

47 (iv) During the temporary absence of any secretary from Roorkee he will arrange for his work to be carried out by some other member proposed by him and approved by the President

47 (v) At the general meeting held before the close of a College session at which certain new secretaries for the ensuing session are elected a Finance Committee shall be formed for preparing the annual budget The Committee will include —

(a) A chairman (elected from 3rd year class)

(b) Four members other than secretaries and elected from each class

(c) The General Secretary who will also act as Secretary of the Finance Committee

The Finance Committee will call upon the various new secretaries to submit their estimates of expenditure After examining these the Committee will frame the budget and will submit it to the Executive Committee for approval After approval has been given by the Committee the budget will be passed at the Annual General Meeting of the Club

47 (vi) Should circumstances warrant it the Executive Committee may make subsequent minor changes in the budget to guard against over expenditure

47 (vii) One General Meeting which shall be called by the President as early as possible after the election of certain secretaries and before the close of the session shall be termed the annual general meeting Ordinary general meetings of the Club can be called by the Executive Committee after two days notice

A general meeting can also be called by one third of the members of the Club after four days notice in writing to the General Secretary The agenda for all general meetings must be posted at least forty eight hours prior to the meeting

Questions regarding the management and expenditure of the Club can be asked by any member if twenty four hours' notice is given to the General Secretary about them previous to a general meeting subject to the approval of the President

A vote of no confidence can only be passed on any secretary f two thirds of the members of the Club desire to do so

If in the opinion of the President of the Club any secretary of the Club is found neglecting his duties he will call upon the secretary concerned for an explanation If the explanation is found to be unsatisfactory the secretary will be removed with the approval of the Principal and the person so removed will not be eligible for re election The President will then call upon the members of the Club to elect a new secretary as soon as possible In the meantime the General Secretary will carry on the duties of the secretary concerned

At the Annual General Meeting and all general meetings either the President, Vice President or Chairman of the Executive Committee will preside Strict order will be maintained by members present at the annual general meeting and ordinary general meetings Lack of discipline on the part of any member or members at any general meeting at which the President is not presiding shall be reported by the officer presiding to the President for necessary action

The minutes of all general meetings (both annual and ordinary) shall be recorded by the General Secretary as soon as possible after the meetings and the same sent to the President for perusal

47 (viii) The quorum for either an annual, general or ordinary meeting shall consist of one third the number of active members of the Club excepting when constitutional changes are to be discussed when a quorum of at least two thirds of the number will be required

47 (ix) The following subscriptions shall be paid in advance by each member of the Club and will be deposited in the College Treasury —

(a) A compulsory subscription of Rs 3 per mensem for each of the 9 months of each session from each Civil Engineer class student

(b) A compulsory entrance fee of Rs 10 from each Civil Engineer class student

(c) Honorary members if resident in Roorkee, shall be required to pay a subscription of Rs 2 per mensem

47 (x) The Club premises shall only be used for entertainments or meetings of a general nature and only with the Principal s sanction

47 (xi) The Executive Committee may provided a resolution has been passed at a general meeting collect extra subscriptions to meet any proposed expenditure which must be for a general purpose not provided for in the ordinary yearly accounts This may be collected through the College office and all members will have to pay the subscription In special cases the President can allow a single member not to take part in a function and not pay but in cases where more than one member dissents the case must be referred to the Principal whose decision shall be binding on the dissenting members

47 (xii) The cash from the regular subscriptions and billiards earnings shall be kept in the College Treasury The amount accumulated from billiards will be earmarked for

repairs and upkeep of the table and not used for any other purpose without the express sanction of the Principal If money other than revenue is required for billiard table repairs, arrangements must be made in the following budgets to repay such money from revenue

The General Secretary will maintain an up-to date record of the total receipts and expenditure of the Club during his year of office

Expenditure from capital must in all cases be regarded as a loan, and budget provision made for repayment from revenue This repayment need not necessarily be made in one year All expenditure from capital must have the sanction of the Principal

At the beginning of each month the secretaries of the various sections will hand their accounts, together with vouchers and bills to the General Secretary, who will submit bills to the President after ascertaining that they are within the budget allotment The President may either sign the pay order or delegate the power to the Vice President and the General Secretary will draw the funds required from the treasury and distribute to the section secretaries concerned V P P charges will be dealt with in a similar manner but must be paid as they arise

47 (xiii) The General Secretary shall be allowed an imprest of Rs 10 for petty expenses of the Club Such imprest will be recouped as often as is necessary

47 (xiv) The General Secretary, with the assistance of the section secretaries will prepare a detailed account of all expenditure and receipts each month These accounts will be audited by the Finance Committee each quarter The a[illegible] report will then be considered by the Executive Com

and the audited accounts for the whole year placed before the Annual General Meeting of the Club

The various secretaries shall also submit a detailed report of their work at this General Meeting

47 (xv) The Club premises will usually be open from 10 a m to 9 p m in the first half session and from 10 a m to 10 p m in the second half session but on Sundays and holidays the Club shall open from 8 a m and 7 a m respectively On special occasions the Club premises may be kept open after the aforesaid hours provided the Executive Committee has previously obtained the sanction of the Principal through the President unless he is the Principal otherwise through the Vice President The Club premises will be closed during the College vacation and no member or honorary member shall have the right to use them during that period

47 (xvi) Members are expected to use the Club property with great care and not to remove from the Club premises anything which is not their private property

Any damage to Club property must be reported promptly to the Vice President by the General Secretary The member concerned shall pay for the damage such amount as is assessed by the Personal Assistant to the Principal upon intimation from the President or Vice President after the approval of the Principal has been obtained

An up-to-date inventory of all the Club property shall be kept with the General Secretary and the departmental secretaries shall also keep a list of the property in their charge Copies of these lists will be put up on the notice board for a week in the beginning of the session The proposals for new purchases together with an estimate of the cost of same are to be submitted to the President through the Vice-President

for countersignature before any purchase is made A list of all such proposed new purchases is to be exhibited on the notice board from time to time

The secretaries should realize that they are servants of the Club and are not entitled to privileges other than those enjoyed by all the members of the Club In no circumstances must they use any Club property for their own private use Neither must Club servants be called upon to perform duties other than those connected with the Club Any such instances brought to the notice of the President will be dealt with by him in consultation with the Executive Committee In every case the action taken shall be reported to the Officer in charge, Civil Engineer Class

47 (xvii) A member may bring with him to the Club premises occasionally one or two gentlemen as his guests He will be responsible for his guests while they are in the Club premises

No guests will be allowed to be present at the General or Business meetings of the Club

On the occasion of any Club function invitations shall be issued only by the General Secretary, after the list of invitations has been approved by the President Members desiring to invite any friends will send the names and addresses of these friends beforehand to the General Secretary who will submit all names to the President for approval

47 (xviii) The Club establishment will be regulated and controlled by the General Secretary under the orders of the Executive Committee

The Club premises will be properly looked after and kept clean and tidy under the supervision of the Garden and the General Secretaries Anything in the nature of repairs being required will be reported to the Personal Assistant to the Principal

The Personal Assistant to the Principal will report to the President any defect in cleanliness for necessary action

47 (xix) Instances of neglect or indiscipline on the part of any servant of the Club shall be brought at once to the notice of the General Secretary, who may recommend him to the President for such disciplinary measures as may be necessary

47 (xx) During the absence of members on duty in camp one or more of the Club servants as may be decided by the Executive Committee may accompany them to be in charge of the refreshments and indoor games at the camp If considered necessary by the Executive Committee temporary establishment may be engaged for the period of the camp, provided the budget allotment will cover the extra charge

47 (xxi) The billiard table can be used by members on the payment of the following charges Annas 2 per member for singles and anna 1 pies 6 per member for doubles per game lasting 25 minutes or part thereof, to be charged against those taking part in a game These charges will be realized through the College office each month

Any damage to the billiard table cloth shall be paid for at the minimum rate of Rs 5 per inch For the first cut the charge will be more, the amount of which will be fixed by the President

Members are expected to abide by any other instructions regarding billiards issued by the Billiards Secretary, and approved by the President

47 (xxii) Several indoor games can be played at present in the Club Gambling is definitely prohibited in the Club premises

47 (xxiii) Badminton and tenikoit are the only outdoor games provided by the Club at present and for these no extra charge is made

47 (xxiv) Members will vote for the newspapers and periodicals which they desire for the Club, on a list circulated by the News Secretary at the close of the College session The proposed list shall then be submitted to the Executive Committee and forwarded by the Chairman of the Executive Committee to the President for approval The order for foreign periodicals will be placed before the annual vacation begins

At the beginning of the College session all papers selected by the Executive Committee will be auctioned to the members of the Club and the proceeds credited to the Club funds The purchaser of any paper or periodical will receive the old copy of the same as soon as the new one arrives

47 (xxv) The constitution can be modified only once a year and only then provided 75 per cent of the quorum laid down in rule 47 (viii) vote in favour of the proposed changes Before any such change can be discussed it shall be necessary for the General Secretary to give one month's notice to all members For this it is also necessary to obtain the sanction of the Principal

All correspondence including newspapers and periodicals meant for the Club shall be delivered to the General Secretary, who will dispose of them in the manner required by the rules

47 (xxvi) All members when attending the Club are requested to refrain from appearing in negligé dress and are to be neatly and properly attired

Rules of the Civil Engineer Class Mess

48 (i) The mess shall be called the Civil Engineer Class Mess and all Civil Engineer Class students shall be eligible to join it

Any student, who wishes to join, must inform the Principal in writing through the O C C E and once he has joined he will not be allowed to resign during the session current except for reasons noted in paragraph 21 Any student, who wishes to resign for the ensuing session, must inform the Principal in writing through the O C C E before he leaves the College for the long vacation

48 (ii) The management of the mess shall be entrusted to a committee composed of —

(i) a President who will be a member of the Staff appointed by the Principal,

(iii) six students two of whom are to be elected from the 2nd year, one from the 1st year and one from the 3rd year and two other students whom the President has the power to select

N B —*Each class of member is to be represented on the* committee, i e vegetarian and non vegetarian

In addition to this the President may form sub-committees from among the students for the running of the mess

The Personal Assistant to Principal will function as President should the President be away at any time

The senior student of the two members elected from the 2nd year shall be the Honorary Secretary and the junior student the Assistant Secretary. It is compulsory for the students elected to serve.

The Mess Committee shall meet as often as the President may call.

18 (iii) Between the date the College reopens after the long vacation and October 31 of each year the President will call an annual general meeting of all members of the mess to elect the committee for the session and to consider any suggestions for improvements or alterations for the general welfare of the mess. Any such suggestions, in writing, must be lodged with the Honorary Secretary at least 3 clear days before the date of the annual general meeting.

Annual General and other meetings

No other general meeting is to be called except with the previous sanction of the President.

The Principal has the right to accept or vote all proposals, etc. passed at the annual general or any other general meeting or committee meeting.

All communications concerning the mess which are addressed to the Principal are to be sent to him through the President.

18 (iv) The rates of subscriptions shall be as follows —

Subscriptions

(i) An entrance fee of Rs 2 per student upon first joining.

(ii) A monthly subscription of Re 1-8 per student per session.

(iii) The members of the mess will be required to pay Rs 20 as an advance money to effect cash pur

chases of food stuff for the mess The advance will be adjusted at the end of the College Course or at any other time, if a member resigns

The monthly messing charges will be worked out every month based on the actual expenditure incurred, and will thus vary every month The approximate monthly amount will, however, be Rs 40 for the vegetarians and Rs 50 for the non-vegetarians.

NOTE—All entrance fees, monthly subscriptions and messing charges will be collected as " College Dues ".

48 (v) All members of the mess will be liable for their monthly subscription whether absent from the mess or not

Members of the mess will be allowed a rebate from their monthly messing charges for —

(i) Whole days away on tour,

(ii) One whole day or more when away on sanctioned leave, i e leave sanctioned as per College Standing Orders

But for those days for which this rebate is allowed a charge of annas four per day will be made for table money.

The rebate to be allowed will be as follows —

	Rs	a	p	
(i) Vegetarians	1	6	0	per day
(ii) Non vegetarians	1	10	0	

A book will be maintained in the mess and all members who wish to avail themselves of the concession of rebate on messing charges for any absence as noted above must sign this book 24 hours before they leave the College Should they fail to do so for any reasons whatsoever full messing charges will

have to be paid There will be no excuses accepted for an infringement of this rule In the case of a whole class being away on tour or the whole three classes then the senior student in either case who is a member of the mess will be responsible for signing the book for all

N B —Afternoon tea as a compulsory item will be dropped Arrangements will however be made for those who wish to stick to this item for which extra charges will be levied on them

No rebate for a single meal will be allowed unless a member drops down a particular meal for more than 7 consecutive days from the date he informs the Honorary Secretary of his intention to do so The rebate then will be worked as follows —

	Vegetarians			Non vegetarians		
	Rs	a	p	Rs	a	p
Dinner	0	8	0	0	10	0
Breakfast	0	4	0	0	5	0
Lunch	0	6	0	0	8	0

It will however not affect the payment of table money

No member will be allowed to change from vegetarian or non vegetarian menu or *vice versa* during the middle of a month He can do so in the beginning of a month by informing the Mess Secretary

For meals on days of departure and return members will pay in addition to the table money charges for each meal of which they partake at the following rates —

	Rs	a	p
(i) Vegetarians—			
(a) Breakfast	0	6	0
(b) Lunch	0	9	0
(c) Dinner	0	11	[illegible]

	Rs	a	p
(ii) Non vegetarians—			
(a) Breakfast . . .	0	7	0
(b) Lunch	0	11	0
(c) Dinner .	0	14	0

Should a member be ill and confined to his quarters by the College Medical Officer, he may partake of his meals in his quarters but his own servants will bring the food from the mess. On no account will mess appointments, etc be allowed to be taken to a member's room in cases other than for illness

Members are expected to be punctual at all meals No responsibility can be assumed for the provision of meals out of regular hours except as provided for in clause 18

48 (vi) No member may invite any guests to any meal without first entering in the guest book (which will be maintained in the mess for the purpose), notice of his intention should be given at least 2 hours before the time the meal starts Concellation under 2 hours' notice will be accepted.

The rates for single meals for guests will be as under :—

	Rs	a	p
(i) Vegetarians—			
(a) Breakfast ..	0	6	0
(b) Lunch ..	0	9	0
(c) Tea ..	0	6	0
(d) Dinner ..	0	11	0
(ii) Non-vegetarians—			
(a) Breakfast ..	0	7	0
(b) Lunch ..	0	11	0
(c) Tea ..	0	6	0
(d) Dinner .	0	14	0

The rates for the whole day messing for guests will be as under

	Rs	a	p
(i) Vegetarians	. 1	8	0
(ii) Non vegetarians	1	13	0

48 (vii) No invitations in the name of the mess shall be given to any individual or party without the consent of the President and if consent be given, all members will bear a proportion of the cost, whether absent or not

General invitations

48 (viii) All property, furniture, appointments, etc in the mess is as far as the mess is concerned the property of the Thomason College of Civil Engineering and no individual member has any share in it whatsoever

Mess property.

All damage done by members whether accidentally or not will be paid for by the members causing such damage and such members will sign a chit for any such damage, voluntarily

The right to lend any of the mess property, servants, etc for any College functions, teas, etc is vested solely in the President The mess property and appointments are not in any case to be lent to any private individual or individuals whether belonging to the College or not

48 (ix) It is the duty of the Secretary in conjunction with the President to prepare the menu for the ensuing week and to see that the food supplied cooked or uncooked is of the best quality The Secretary will bring complaints to the notice of the President The mess servants are under the direct control of the President

Secretary's duties

48 (x) The Mess Secretary will arrange messing in camp for those members of the mess who have to go to the 2nd year survey camp or to 3rd year minor or major project camps

Camp messing

48 (xi). The hours of messing will be as follows annually.—

(i) Breakfast	8 00 hours to 9 30 hours
(ii) Lunch	12 00 ,, to 14 00 ,,
(iii) Tea	To be fixed periodically by the President
(iv) Dinner	20 30 hours

or as may be fixed from time to time

48 (xii) The mess President in consultation with Mess Secretary will employ all table servants and other servants for the mess Member's private servants are not to be allowed in the building or its precincts and kitchens

48 (xiii) A complaint book will be maintained in the mess and those members who have any complaints to make will enter the same in it It will be the duty of the Secretary to bring to the President's notice all complaints entered No complaint if unsigned or frivolous will receive attention

48 (xiv) The senior student in mess will be held responsible for discipline in the absence of any member of the staff

48 (xv) No alcoholic drinks will be sold in the mess nor are they to be carried in to the mess for consumption by any member but mineral waters will be sold but only on cash payment, similarly smokes

nd 48 (xvi) During the first half session the mess will open at 8 00 hours and close at 20 50 hours During the second half session the hours will be from 7 00 hours to 22 45 hours

48 (xvii) No meals will be obtainable by any members of the mess except at the hours named in paragraph 11 Should any member want any meal at any odd time he can only obtain same provided it is available at the time

48 (xviii) No member of the mess other than those named below is allowed to enter the kitchens or pantries or stores The Secretary and members of the committee are to inspect the kitchens, pantries and stores as often as they deem necessary

Further duties of Secretary and members of committee

48 (xix) The members donations, fees and monthly subscriptions are for the replacement of mess furniture and appointments and the control of such funds will be in the hands of the Principal or as he may decide to depute to the President

Use of donations, etc

48 (xx) Upon the first opening of the mess a complete inventory of all mess property, appointments, etc will be handed over to the President and it will be duty of the President to see that this inventory is checked as he may decide at least once a month Any deficiencies, breakages, etc are to be noted and reported to the Principal provided such deficiencies and *damages* have *not* been *made good by the* individuals responsible for same.

Inventory.

48 (xxi) The Principal reserves to himself the right to call upon any member of the mess to resign should he think such action is warranted for any cause whatsoever

Resignation

48 (xxii) For all meals, except tea every member shall attend the mess attired in dress sanctioned in College Standing Orders for class attendances For those who may wish to do so dinner dress may be used for dinner For tea members may attend in sports dress Members appearing for meals not dressed in accordance with this rule will be asked by the senior member present to leave the mess to attire themselves properly

Dress.

48 (xxiii) No smoking will be allowed during the first half an hour of any meal except during tea.

48 (xxiv) No concert parties or other kinds of entertainments will be allowed in the mess building These entertainments when sanctioned are to be held in the C E Students' Club

Rules of the Overseer Class Club

49 (i) All students of the Overseer Class have to be members of the Club, and they shall abide by the rules and regulations in force A breach of the rules or conduct unbecoming a member of the Club will debar him from the enjoyment of the Club privileges to the extent approved by the President on the recommendation of the Club Secretary

49 (ii) The Principal will be the patron of the Club and *the Head Master will be the President of the Club*

The Vice President will be the senior student of the 2nd year who will also be one of the six members of the Executive Committee

The President will be assisted in the management of the Club by a committee composed of five members Five of these will be elected at a general meeting of the Club in the following manner —

(a) Club Secretary,
(b) Tennis Secretary,
(c) Hockey Secretary,
(d) Football Secretary,
(e) Volleyball Secretary,

(b)–(e): Will be in charge of various outdoor games connected with the Club

Disciplinary and financial control will be exercised by the Head Master Overseer Class

49 (iii) (a) Each student of the Overseer class will pay compulsorily Rs 5 per mensem for each of the 9 months of

session for Club Recreation and Boating of which Rs 5 be credited to the Club and Recreation Fund and Rs 2 he Boating Fund

(b) Each will pay compulsorily an entrance fee of 3 upon first joining the College the whole of which will credited to the Club and Recreation Fund

Annual Regatta Rules

50 (i) *President*—The Principal will appoint a member he College Staff as President of the Regatta Committee

The President will choose his own Committee

50 (ii) *Date*—The Annual Regatta will be held early June on a date fixed by the Principal on the recommenda n of the President

The Annual Regatta is open to such students of both Engineer and Overseer classes as have passed both the mming and rowing tests

Heats for the various events of the Regatta will take e on dates to be notified by the President

50 (iii) *Entries and Entrance fee*—All entries will e at noon on a date to be notified by the President

The entrance fees will be 8 annas f r entrants per chal enge excluding the coxswains

50 (iv) *Events*—The Regatta events will be as s —

(1) Challenge Single Sculls
(2) Challenge Double Sculls
(3) Challenge Pair Oars
(4) Challenge Fours
(5) (a) Swimming Race } For Indian garrison
(b) Pontoon Race }
(6) Greasy Pole (Open to public)

48 (xxiv) No concert parties or other kinds of entertainments will be allowed in the mess building These entertainments when sanctioned are to be held in the C E Students' Club

Rules of the Overseer Class Club

49 (i) All students of the Overseer Class have to be members of the Club, and they shall abide by the rules and regulations in force A breach of the rules or conduct on becoming a member of the Club will debar him from the enjoyment of the Club privileges to the extent approved by the President on the recommendation of the Club Secretary

49 (ii) The Principal will be the patron of the Club and the Head Master will be the President of the Club

The Vice President will be the senior student of the 2nd year, who will also be one of the six members of the Executive Committee

The President will be assisted in the management of the Club by a committee composed of five members Five of these will be elected at a general meeting of the Club in the following manner —

(a) Club Secretary,
(b) Tennis Secretary,
(c) Hockey Secretary,
(d) Football Secretary,
(e) Volleyball Secretary,

} Will be in charge of various outdoor games connected with the Club

Disciplinary and financial control will be exercised by the Head Master, Overseer Class

49 (iii) (a) Each student of the Overseer class will pay compulsorily Rs 5 per mensem for each of the 9 months of

each session for Club Recreation and Boating of which Rs 5 will be credited to the Club and Recreation Fund and Rs 2 to the Boating Fund

(b) Each will pay compulsorily an entrance fee of Rs 3 upon first joining the College, the whole of which will be credited to the Club and Recreation Fund

Annual Regatta Rules

50 (i) *President*—The Principal will appoint a member of the College Staff as President of the Regatta Committee

The President will choose his own Committee

50 (ii) *Date*—The Annual Regatta will be held early in June on a date fixed by the Principal on the recommendation of the President

The Annual Regatta is open to such students of both Civil Engineer and Overseer classes as have passed both the swimming and rowing tests

Heats for the various events of the Regatta will take place on dates to be notified by the President

50 (iii) *Entries and Entrance fee*—All entries will close at noon on a date to be notified by the President

The entrance fees will be 8 annas for entrants per challenge event excluding the coxswains

50 (iv) *Events*—The Regatta events will be as follows —

(1) Challenge Single Sculls
(2) Challenge Double Sculls
(3) Challenge Pair Oars
(4) Challenge Fours
(5) (a) Swimming Race } For Indian garrison
(b) Pontoon Race }
(6) Greasy Pole (Open to public)

50 (v) *Course*—All events will be rowed on the Ganges Canal downstream The finishing point will be about 300 yards above the Ganeshpur bridge The length of the course will be as follows —

For events 1, 2 and 3—½ mile

For event 4—¾ mile

50 (vi) *Substitutes*—One substitute will be allowed to row in a four to replace a man who is unfit provided that the substitute is eligible and his name has not been entered in any other crew in that event The name of the substitute need not be submitted

No substitute will be allowed in half mile races

50 (vii) Events 1, 2, 3 and 4 are open to students of both the Civil Engineer and Overseer classes, but the crews and cox are to be either all Civil Engineer class students or all Overseer class students A Civil Engineer class crew and cox may consist of a crew and cox drawn from all 3 years and similarly an Overseer class crew and cox may consist of a crew drawn from both years There is no special race in which crews from any particular year compete against another such crew

50 (viii) *Punctuality*—Heats will be started punctually at the time fixed Competitors should arrive at the starting point 10 minutes before the time in order to adjust stretchers and straps, etc Any crew not found ready at the time fixed for the start is liable to be disqualified

50 (ix) *Disqualification*—(a) Any crew causing delay at the start by inability to turn and manoeuvre their boat as ordered by the starter will be disqualified

(b) Any crew fouling another crew during the race by touching with their oars or boat the oars or boat of the other crew when in the latter crew's water will be disqualified

No crew is permitted to take its opponent's water unless it is leading by two lengths and on the approach of the other it must give way and retire to its own water

50 (x) *General*—A boat is never to be brought into the bank or taken out from the bank unless the boat is pointing upstream Thus a boat must always be turned round after a race before approaching the bank

50 (xi) *Prize distribution*—The prize distribution will take place soon after the last race is rowed Prizes will be awarded for events 1, 2, 3 and 4 and also for boating (best oar in Civil Engineer Class 3rd year or Overseer Class 2nd year) The prizes for the events 5 and 6 will not be awarded but will be sent over to Adjutant, K G O Bengal Sappers and Miners to be given to the winners by the Commandant

Boating and Swimming Rules

51 (i) These events will be in charge of a member of the staff who will be appointed by the Principal each year and who will be known as Officer in-charge Boating

51 (ii) The duties of Officer in charge, Boating, will be as follows —

(a) To arrange for the swimming tests in consultation with the President Recreation on or about November 15, April 1 and July 1 each session and to maintain a record of the results of these tests

(b) To arrange and supervise the coaching in rowing of such students as have passed the swimming test and also to arrange for the rowing test

(c) To arrange to store up all boats by June 30, and report to President Recreation his having done

To inspect the boats from time to time and report the result of these inspections

(*d*) To report to President Recreation by January 31 each year the condition of each boat and submit an estimate for the cost of repair, varnishing, etc and to see that repairs, etc are completed by March 15 at the latest

(*e*) To submit to President Recreation by May 31 his proposals if any, for the replacement of old boats by new

(*f*) To maintain a log book of boats, giving the following inventories —

(i) number and description of each boat, and its equipment,

(ii) year of its purchase or building and the purchase price (together with freight, etc) or cost of building

(iii) cost of repairs (including varnishing) executed during the College session, together with dates of execution

51 (iii) *Swimming*—All students of the Civil Engineer and Overseer classes are required to pass the swimming test before they can be permitted to take up rowing

Students who wish to learn to swim must begin their lessons in Amber Talab (or in the College Swimming Tank when it is completed) and not in the main canal Such students will take their lessons only at times arranged by Officer in charge of Boating who will see that the Boatman is present at these lessons

Students will not be allowed to enter the boats or bathe in the main canal till they have qualified in swimming

The swimming tests will be held each year on or about November 15, April 1, and July 1 The test shall consist of swimming half way across the canal and back and will take place downstream of Solani Aqueduct

Maximum marks allotted for the test are —

For Civil Engineer Class students—30

For Overseer Class students—20

51 (iv) *Rowing*—The rowing test will be held in the last week of April

To pass the test a student must be able to handle the oars properly, should be able to backwater with either or both hands and should be able to turn the boat in any direction

No marks will be allotted for this test

Only such students as have passed this test will be allowed to enter the Regatta

51 (v) *Boating*—Boating season will be from the beginning of April to first week in June during which the finals of Annual Regatta will be held

Boating is only allowed in the reach of the canal between the brick lions below the Roorkee city bridge and the Ganeshpur bridge

No students will be permitted to take out boats before April 1

To encourage rowing, the boating season may be extended till the end of June

Students will not be permitted to take out boats after June 30

Special Rules.

52 (i) All European students are expected to attend Divine Service once every Sunday at their own place of worship

52 (ii) Indian students of Overseer and Draftsman classes, as well as those of the Civil Engineer Class, who do not join the common mess will make their own arrangements for messing

53 Students, whether European or Indian, of the Overseer and Draftsman classes will make their own arrangements for messing

54 Students, whether European or Indian, of the Civil Engineer Class will make their own arrangements for messing unless they join the Common Civil Engineering Class Mess

YEARLY LISTS OF STUDENTS, WHO HAVE PASSED OUT OF THE COLLEGE FROM 1939 INCLUSIVE (FOR LISTS DATING BACK TO 1933 INCLUSIVE SEE CALENDAR FOR 1937-38 FOR LISTS DATING BACK TO 1928 INCLUSIVE SEE CALENDAR FOR 1932. FOR LISTS DATING BACK TO 1910 INCLUSIVE SEE CALENDAR FOR 1928), AND FOR LISTS TO 1848 SEE CALENDAR FOR 1910.

1939

No	Name	Where educated	Marks gained	Per cent	Remarks
	CIVIL ENGINEER CLASS, THIRD YEAR (*Full marks*—7990)				
1	Akhtarul Islam Khan	Bareilly College, Bareilly	58?4	73	Honours Diploma as Civil Engineer Council of India Prize of Rs 1,000 for General Proficiency Silver Medals for Civil Engineering (Theoretical) and Surveying
2	Shri Krishna Agrewala	University of Allahabad	5678	71	Honours Diploma as Civil Engineer Thomason Prize of Rs 250 for the most distinguished student who obtains the Honours Diploma but does not gain the Council of India Prize Thomason Memorial Gold Medal and books worth Rs 25 for best Engineering Designs
3	Mahabir Prasad Jain	D A V College, Cawnpore	5501	69	Honours Diploma as Civil Engineer Rai Bahadur Kanhaiya Lal Gold Medal for the most distinguished Indian student who does not obtain the Council of India or Thomason Memorial Prizes
4	R L Kaushal	Government College Lahore	5401	68	Honours Diploma as Civil Engineer
5	Ashoke Kumar Gupta	LaMartiniere College, Lucknow	540?	68	Honours Diploma as Civil Engineer Silver Medal for Drawing The Puran Mal Silver Medal for Public Health Engineering.

1939

No.	Name	Where educated	Marks gained	Per cent.	Remarks
6	Virendra Nath Srivastava	University of Allahabad	5355	67	Honours Diploma as Civil Engineer.
7	Debi Saran Sinha	Queen's College, Benares.	5236	66	Ordinary Diploma as Civil Engineer. Cautley Memorial Gold Medal for Mathematics (Group II). Calcott Reilly Memorial Gold Medal for Applied Mechanics. General MacLagan's Prize of books for Electrical Engineering and Physics. Silver Medal for Mechanical Engineering. Sushila and J. Mitra Memorial Silver Medal for Indian student, who obtains highest marks in Chemistry.
8	Kewal Krishan	Government College, Ludhiana.	5228	65	Ordinary Diploma as Civil Engineer
9	Naresh Chandra Saksena	D. A. V. Intermediate College, Dehra Dun	5226	65	Ordinary Diploma as Civil Engineer Silver Medal for Laboratory Practice (Group IV). Practical
10	John Theodore Talibuddin	Government Jubilee Intermediate College, Lucknow	5106	64	
11	Roshan Lall Aggarwal	D. A. V. College, Lahore	5024	64	
12	Abdul Hamid	Meerut College, Meerut.	4888	61	Ordinary Diploma as Civil Engineer
13	Purushottam Singh	Lucknow University, Lucknow.	4622	58	
14	Partul Chandra Khanna	Government College, Lahore.	4412	55	

1939

No	Name	Where educated	Marks gained	Per cent	Remarks
15	Bhupendra Sarup Johri	University of Allahabad	4408	55	Ordinary Diploma as Civil Engineer
16	Harish Chandra Goel	D A V Intermediate College Dehra Dun	4407	55	
17	Darshan Lall Gupta	Hindu University Engineering College, Benares	4303	54	
18	Jassa Singh	Agra College, Agra	4226	53	
19	Amarnath Sud	Sanatam Dharam College, Lahore	4089	51	
20	Bhim Sain Aggarwal	Gordon College Rawalpindi	4059	51	
21	S Anzar Ahmad Naqi	University of Allahabad	3955	51	After ignoring equitation test in his case Vide Government Order United Provinces, Education Department no 3832/XV—807 39 dated the 22nd December, 1939
	Bishambhar Dayal Gaur	Jaswant College Jodhpur	5127	64	Ordinary Diploma as Civil Engineer
	(Full marks—6360)				
	Lieut Jogendra Singh Dhillon	Indian Military Academy, Dehra Dun	4164	65	Honours Diploma as Civil Engineer
	Lieut Amar Datt	Ditto	4160	65	
	Lieut M Anwar Khan	Ditto	4136	6	

1939

No	Name	Where educated	Marks gained	Per cent.	Remarks
	OVERSEER CLASS, SECOND YEAR (*Full marks*—4200)				
1	Jitendra Kumar Mital	Meerut College, Meerut	3181	76	Higher Certificate as Overseer Silver Medal and Rs 100 for General Merit Rai Bahadur Kanhaiya Lal Silver Medal for best Indian student who stands 1st in the class The Durga Dass Dutt Silver Medal for best Indian student obtaining Higher Certificate Silver Medals for Surveying, Drawing, Workshops (Group V), and Project
2	Kailash Chandra Jain.	Meerut College, Meerut.	3052	73	Higher Certificate as Overseer Rai Bahadur Kanhaiya Lal Silver Medal for Indian student who stands 2nd in the class Silver Medal for Mathematics (Elementary) Fairley Memorial Silver Medal for Applied Mechanics Sullivan Memorial Silver Medal for Mechanics
3	Tara Chand	N R E C College, Khurja	2995	71	Higher Certificate as Overseer. Silver Medals for Descriptive Engineering and Accounts
4	Jai Prakash	Meerut College, Meerut.	2973	71	Higher Certificate as Overseer Keay Memorial Silver Medal and Rs 18 for Estimating
5	Prem Narain Tayal.	Government Intermediate College, Allahabad	2920	70	Higher Certificate Overseer

1939

No	Name	Where educated	Marks gained	Per cent	Remarks
6	Hari Krishna Gupta	P B A S High School, Hathras	2825	67	Higher Certificate as Overseer Silver Medal for Accounts
7	Niranjan Lal Sharma	D N High School, Meerut	2793	67	
8	Devi Shankar Varma	A V High School Anupshahr	2740	65	
9	Brij Bhushan Lal	Government High School Muzaffar nagar	2720	65	Higher Certificate a Overseer
10	Raghuraj Singh	Udai Pratap College, Benares	2692	64	
11	Om Prakash	D A V High School Muzaffar nagar	2691	64	
12	Kailash Chand	Meerut College Meerut	2686	64	Higher Certificate as Overseer The Puran Mal Silver Medal for Public Health Engineering
13	Jai Prakash Goel	Meerut College Meerut	267[illegible]	64	
14	Om Prakash Kansal	Ditto	2677	64	
15	Bal Krishen	D N High School Meerut	2676	64	
16	Harish Chandra Gupta	G C O High School Roorkee	2664	63	
17	Gulzari Lal Goel	Kashi Ram High School Saharanpur	2650	63	Higher Certificate as Overseer
18	Satya Prakash Maithel	Meerut College Meerut	2639	63	
19	Ram Prasad Gupta	S D High School Etawah	2637	63	
20	Kailash Chandra	Government Intermediate College Moradabad	2597	62	
21	Ranbir Singh	Meerut College Meerut	2590	62	

1939

No	Name	Where educated	Marks gained	Per cent	Remarks
22	Om Prakash Gupta	D S Intermediate College, Aligarh	580	[illegible]	Higher Certificate as Overseer
23	Shiva Kumar Sharma	Government High School Muzaffarnagar	[illegible]7[illegible]	61	Ordinary Certificate as Overseer
24	Jagdish Saran Gupta	Government Intermediate College, Moradabad	5[illegible]7	61	Higher Certificate as Overseer
25	Sita Ram Sharma	Government C O High School Roorkee	553	61	
26	Shiam Lal	Meerut College Meerut	543	61	
27	Rameshwar Das	H A V High School Deoband	541	60	
28	Chander Sen	Kashi Ram High School Saharanpur	540	60	
29	Om Prakash Gupta	K F M U J Intermediate College Lakhaoti	52[illegible]	60	
30	Dhaneshwar Rastogi	Meerut College Meerut	5[illegible]	60	Ordinary Certificate as Overseer
31	Mitra Sen	B N S D Intermediate College, Cawnpore	[illegible]	5[illegible]	
32	Om Prakash Jain	Government C O High School Roorkee	[illegible]	[illegible]	
33	Bhawani Prasad Goel	Jat Intermediate College, Lakhaoti	[illegible]	59	
34	Jayanti Prasad Goyal	N R E C College Khurja	[illegible]	[illegible]	
35	Prakash Chander Jain	Denney High School Rawalpindi	[illegible]	5[illegible]	

1939

No.	Name	Where educated	Marks gained	Per cent.	Remarks
36	Mukhtar Singh Ikhtar.	J. V. High School, Baraut.	2434	58	Ordinary Certificate as Overseer.
37	Maheshwar Prasad Srivastava.	D A V. High School, Cawnpore	2432	58	
38	Padam Prasad Jain	D N. High School, Meerut.	2362	56	
39	Hukam Chand Jain.	K. R High School, Saharanpur.	2349	56	
40	Brij Gopal	Government C O High School, Roorkee	2324	55	
41	Jagdish Prasad Agarwala	D. A. V. Intermediate College, Dehra Dun.	2305	55	
42	Jodh Singh Negi	Ditto	2298	55	
43	Saiyid Riazul Hasan Burney	Muslim University, Aligarh.	2284	54	
44	Muhammad Wasim Qureshi	Jubilee Intermediate College, Lucknow.	2100	50	

19 9

No	Name of student	Remarks
	DRAFTSMAN CLASS THIRD YEAR	
1	Anand Singh Bisht	Certificate as Draftsman in 1st division. Silver Medal and Rs 30 for Best Draftsman Qualified in Estimating
2	Tirloki Nath	Certificate as Draftsman in 1st division. Silver Medal and Rs 20 for 2nd Best Draftsman Qualified in Estimating
3	Raghubir Sharan	Certificate as Draftsman in 2nd division. Qualified in Estimating
4	Shyam Sundar Misra	
5	M Hamid Khan	Certificate as Draftsman in 3rd division Qualified in Estimating

1940

No.	Name	Where educated	Marks gained	Per cent.	Remarks
	CIVIL ENGINEER CLASS, THIRD YEAR (*Full marks*—6990)				
1	Ramesh Chandra Agrawala.	Meerut College, Meerut.	5215	75	Honours Diploma as Civil Engineer. Council of India Prize of Rs 1,000 for General Proficiency. Calcott Reilly Memorial Gold Medal for Applied Mechanics Silver Medals for Civil Engineering (Theoretical) and Mechanical Engineering.
2	Ravi Datta	Meerut College, Meerut.	5183	74	Honours Diploma as Civil Engineer Thomason Prize of Rs 25 for the most distinguished student who obtains the Honours Diploma, but does not gain the Council of India Prize Silver Medal for Surveying. Sushila and J. Mitra Memorial Silver Medal for Indian student who obtains highest marks in Chemistry.
3	Gangeshwar Dayal Mathur.	Meerut College, Meerut.	5169	74	Honours Diploma as Civil Engineer Rai Bahadur Kanhaiya Lal Gold Medal for the most distinguished Indian student who does not obtain Council of India or Thomason Memorial prizes Cautley Memorial Gold Medal for Mathematics (Group II). Silver Medal for Drawing

1940

No	Name	Where educated	Marks gained	Per cent	Remarks
	CIVIL ENGINEER CLASS THIRD YEAR—(*contd*)				
4	Kali Charan B Sc	University of Allahabad	5052	72	Honours Diploma as Civil Engineer Thomason Memorial Gold Medal and books worth Rs 25 for best Engineering Designs General MacLagan's Prize of Books for Electrical Engineering and Physics Silver Medal for Laboratory Practice, Group IV (Practical)
5	Lakshmi Chand Agrawal	Government Intermediate College, Etawah	4970	71	Honours Diploma as Civil Engineer.
6	Shri Kant Gupta	Ditto	4927	70	Honours Diploma as Civil Engineer The Puran Mal Silver Medal for Public Health Engineering
7	Gauri Narayan Dikshit, B Sc	University of Allahabad	4722	68	
8	Abdur Rashid	Government College, Lahore	4711	67	
9	Satinder Nath Gupta	Ditto	4660	67	Honours Diploma as Civil Engineer.
10	Arya Bhushan B Sc	Allahabad University, Allahabad	4619	66	
11	Hari Krishna	University of Allahabad	4579	66	
12	Kailash Chandra Goyal	Meerut College, Meerut	4514	65	
13	Bhola Nath Vaish, B Sc	Ditto	4530	65	
14	Bhagwat Prasad	Bareilly College, Bareilly	4521	65	
15	Phul Prakash Gupta	D S Intermediate College, Aligarh	4460	64	Ordinary Diploma as Civil Engineer.
16	Prem Nath Sud, B A	Government College, Lahore	4359	2	
17	Harbans Lall Chhabara	D A V College, Lahore	4342	62	
18	Ram Krishna	Meerut College Meerut	4339	62	
19	Chandra Prakash Goyal.	Government College Ajmer	426[illegible]	61	

1940

No	Name	Where educated	Marks gained	Per cent	Remarks
	CIVIL ENGINEER CLASS THIRD YEAR—(concld)				
20	Parimal Kumar Mukherjee	College of Science, Nagpur	4230	61	Ordinary Diploma as Civil Engineer
21	Benarsidas Tandan	S D College, Cawnpore	[illegible]131	59	
22	Bidhu Ranjan Sen M.SC	Christian College, Lucknow	4095	59	
23	Mahesh Prasad Kapoor	Ewing Christian College Allahabad	4014	57	
24	Shanti Kumar Charan	Agra College Agra	39[illegible]4	57	
25	Amal Kumar Roy	Government Intermediate College Allahabad	3896	56	
26	Ved Mitra Manglik	D A V College, Dehra Dun	3758	54	

1940

No	Name	Where educated	Marks gained	Per cent	Remarks
	OVERSEER CLASS SECOND YEAR (*Full marks—4000*)				
1	Vishwambhar Prasad	Government High School, Fatehpur	3264	82	Higher Certificate as Overseer Silver Medal and Rs 100 for General Merit Rai Bahadur Kanhaiya Lal Silver Medal for the best Indian student who stands Ist in the class The Durga Das Dutt Silver Medal for the best Indian student obtaining Higher Certificate Sullivan Memorial Silver Medal for Mechanics The Puran Mal Silver Medal for Public Health Engineering Silver medals for Descriptive Engineering surveying Drawing and Workshops (Group V)
2	Krishna Kumar	Government College, Ajmer	2954	74	Higher Certificate as Overseer Rai Bahadur Kanhaiya Lal Silver Medal for Indian student who stands 2nd in the class.
3	Sahdeo Prasad	Meerut College, Meerut	2923	73	Higher Certificate as Overseer Silver Medal for Mathematics Elementary
4	Jai Bhagwan Gupta	S M Intermediate College, Chandausi	2860	72	Higher Certificate as Overseer Fairly Memorial Silver Medal for Applied Mechanics Keay Memorial Silver Medal and Rs.16 for Estimating
5	Om Prakash Gupta.	Government Technical School, Lucknow	2847	71	Higher Certificate as Overseer

1940

No	Name	Where educated	Marks gained	Per cent	Remarks
6	Virendra Nath Tripathi	B N S D Intermediate, College Cawnpore	2726	68	
7	Mahendra Narain Mathur	Meerut College Meerut	2715	68	
8	Pratap Singh Perti	A P Mission Boys' High School Dehra Dun	2684	6	
9	Brij Mohan Lal Gupta	Hindu College Delhi	2675	67	
10	Qaisar Husain	Government High School, Muzaffarnagar	2659	66	Higher Certificate as Overseer.
11	Ramji Lal Garg	Agra College, Agra	2586	65	
12	Saiyid Muhammad Murtaza Rizvi	Forbes High School Fyzabad	2559	64	
13	Shiva Prakash Singhal	Meerut College Meerut	2485	62	
14	Tirlok Chandra Agarwal	Lucknow Christian College Lucknow	2456	61	
15	Krishna Chandra Gupta	University of Allahabad	2439	61	Higher Certificate as Overseer Silver Medal for Project
16	Shiva Dayal Govila	Ditto	2434	61	
17	Puran Chand	Government High School, Muzaffarnagar	2421	61	Higher Certificate as Overseer
18	Jaiwant Rai Jain	D A V College Jullundur	2420	61	
19	Mahabir Prasad Jain	Meerut College, Meerut	2396	60	
20	Ramesh Chandra	Ditto	2375	59	
21	Randhir Singh Chohan	Bareilly College, Bareilly	2363	59	Ordinary Certificate as Overseer.
22	Ram Kishore Ojha (Ajmer Merwara)	Government College, Ajmer	2344	59	

1940

No.	Name	Where educated	Marks gained	Per cent	Remarks
23	Jai Prakash	Meerut College, Meerut	2339	58	
24	Bhagwat Swarup Gupta	N R E C Intermediate College Khurja	2332	58	
25	Mam Chand	Government C O High School, Roorkee	2311	58	
26	Brij Bhushan Sharma	D A V College, Dehra Dun	2295	57	
27	Phool Chand Goyal	Meerut College, Meerut	2262	57	
28	Mahabir Prasad	S D Intermediate College, Muzaffarnagar	2259	56	
29	Gajai Singh Rawat	K G Government High School Lansdowne (Garhwal)	2254	56	
30	Davendra Kumar Jain	D A V College, Dehra Dun	2237	56	Ordinary Certificate as Overseer
31	Ugra Sen Gupta	Government C O High School, Roorkee	2212	55	
32	Riaz Ahmad Quraishi	Muslim High School Bulandshahr	2199	[illegible]	
33	Bhim Sen	H A V High School, Deoband	2198	55	
34	Champat Lal Sharma	K G K High School Hardoi	2177	54	
35	Talqin Ahmad	Government High School Muzaffarnagar	2162	54	
36	Ram Das Mittal	Ditto	2153	54	
37	Triloki Nath Sharma	Meerut College, Meerut	2144	54	
38	Raghuvar Dayal	Government High School Saharanpur	2111	[illegible]	
39	Keshava Chandra	N A S High School Meerut	2101	53	
	Gobind Prasad Mehrish (Bharatpur)	Sadar High School, Bharatpur	[illegible]	70	Higher Certificate as Overseer Trained for employment in the Bharatpur State only.
	Krishna Sahai Srivastava (Bharatpur)	St John's College Agra	260[illegible]	65	

1940

No	Name of student	Remarks
	DRAFTSMAN CLASS, THIRD YEAR	
1	Chandi Lal Jaiswar ..	Certificate as Draftsman in first division. Silver Medal and Rs 30 for Best Draftsman. Qualified in Estimating
2	Bimal Kumar Jain ..	Certificate as Draftsman in first division Silver Medal and Rs 20 for second Best Draftsman. Qualified in Estimating.
3	Kailash Chandra Jain	Certificate as Draftsman in first division. Qualified in Estimating.
4	Hari Deo	Certificate as Draftsman in second division Not qualified in Estimating.
5	Nihal Chand Gupta ..	Certificate as Draftsman in second division. Qualified in Estimating.
6	Sumer Chand Gupta .	Certificate as Draftsman in second division. Qualified in Estimating.
7	Kailash Chand Gupta ..	Certificate as Draftsman in second division. Qualified in Estimating.

1941

No	Name	Where educated	Marks gained	Per cent	Remarks
	CIVIL ENGINEER CLASS, THIRD YEAR (*Full marks*—7790)				
1	Vidya Ram Vaish	E C College, Allahabad	6419	82	Honours Diploma as Civil Engineer. Council of India Prize of Rs 1,000 for General Proficiency. Calcott Reilly Memorial Gold Medal for Applied Mechanics Cautley Memorial Gold Medal for Mathematics *(Group II) General* MacLagan's prize of books for Electrical *Engineering* and Physics Sushila and J. Mitra Memorial Silver Medal for Indian student who obtains highest marks in Chemistry Silver Medals for Civil Engineering (Theoretical) and Mechanical Engineering
2	Saiyid Sabir Ali Wahidi.	Christ Church College Cawnpore.	6237	80	Honours Diploma as Civil Engineer Thomason Memorial Prize of Rs 250 for the Most Distinguished student who obtains the Honours Diploma but does not gain the Council of India Prize. Silver Medal for Surveying The Puran Mal Silver Medal for Public Health Engineering

1941

No	Name	Where educated	Marks gained	Per cent	Remarks
3	Om Prakash	S M Intermediate College Chandausi	6050	78	Honours Diploma as Civil Engineer Rai Bahadur Kanhaiya Lal Gold Medal for the most distinguished student who does not obtain the Council of India or Thomason Memorial Prizes
4	Om Datt Sharma B SC	University of Allahabad	5923	76	Honours Diploma as Civil Engineer Silver Medal for Drawing
5	Dharampal Singh Tomar, B SC	Agra College, Agra	5865	75	Honours Diploma as Civil Engineer
6	Rajendra Prasad Agarwal	E C College Allahabad	5810	75	
7	Sunder Lal Gupta B A	Government College Lahore	5670	73	
8	Harihar Prasad Ghose	University of Allahabad	5628	72	
9	Profullo Kumar Banerji B SC	Ditto	5494	71	
10	Ratish Mohan Agrawala B.A	Ditto	5388	69	
11	Balbir Krishan Uppal	Government College, Lahore	5313	68	
12	Brahm Swarup Bhalla	Dyal Singh College, Lahore	5282	68	
13	Pratap Singh B SC	E C College, Allahabad	5174	66	
14	Anirudh Singh	U P College and S K School, Benares	5141	66	

1941

No	Name	Where educated	Marks gained	Per cent	Remarks
15	Ravindra Nivas	University of Allahabad	5013	65	Ordinary Diploma as Civil Engineer
16	Brij Bhushan Bansal B SC	Ditto	4988	64	
17	Jyoti Prakash, B SC	Meerut College, Meerut	4978	64	
18	Arun Kumar Sur	University of Allahabad	4947	64	Ordinary Diploma as Civil Engineer Silver Medal for Laboratory Practice Group IV, Practical
19	Kishan Lal Gupta B SC	Meerut College Meerut	4895	63	Ordinary Diploma as Civil Engineer
20	Braj Narain Dube	University of Allahabad	4895	63	
21	Krishna Kamal Chakravarti, B SC	Government Jubilee Intermediate College, Lucknow	4851	62	Ordinary Diploma as Civil Engineer Thomason Memorial Gold Medal and books worth Rs 25 for best Engineering Designs
22	Saiyid Sibto Hasan B SC	Lucknow University	4812	62	Ordinary Diploma as Civil Engineer
23	Girraj Kishore Gupta	Agra College Agra	4794	62	
24	Chaman Lal Ahluwalia B A	D A V College Lahore	47[illegible]	61	
25	Kulbir Singh	Khalsa College Amritsar	475[illegible]	61	
26	Daya Prakash	University of Allahabad	4749	61	
[illegible]	Vishwambhar Dayal B.SC	Meerut College Meerut	4[illegible]95	60	

1941

No	Name	Where educated	Marks gained	Per cent	Remarks
28	Shakti Chand Uppal B.A	Government College Lahore	4611	59	Ordinary Diploma as Civil Engineer
29	Victor Braganza	St Joseph s College Naini Tal	4563	59	Ordinary Diploma as Civil Engineer
30	Rajnarayan Misra B SC	Nizam College Hyderabad Deccan	4476	57	Ordinary Diploma as Civil Engineer
31	Arjun Dutt Chowdhri	E C College Allahabad	431[illegible]	55	Ordinary Diploma as Civil Engineer
32	Ambarish Verma	D A V College Dehra Dun	4249	55	Ordinary Diploma as Civil Engineer

1941

No	Name	Where educated	Marks gained	Per cent	Remarks
	OVERSEER CLASS, SECOND YEAR				
	(*Full marks*—4000)				
1	Krishna Chandra	H A S High School, Kandhla	3285	82	Higher Certificate as Overseer Silver Medal and Rs 100 for General Merit, Rai Bahadur Kanhaiya Lal Silver Medal for Best Indian student who stands first in the class The Durga Das Dutt Silver Medal for Best Indian student who obtains Higher Certificate Fairley Memorial Silver Medal for Applied Mechanics Keay Memorial Silver Medal and Rs 18 for Estimating. Sullivan Memorial Silver Medal for Mechanics Silver Medals for Descriptive Engineering, Survey and Workshops (Group V)
2	Netra Pal Sharma	Agra College Agra.	3000	75	Higher Certificate as Overseer Rai Bahadur Kanhaiya Lal Silver Medal for the Indian student who stands second in the class Silver Medals for Mathematics (Elementary) and Drawing
3	Prem Chand Jain	Government High School, Saharanpur	2921	73	Higher Certificate as Overseer
4	Saiyid Iftikhar Husain	Government High School Aligarh	2904	73	Higher Certificate as Overseer
5	Rama Shankar	Bareilly College Bareilly	2899	72	Higher Certificate as Overseer

1941

No	Name	Where educated	Marks gained	Per cent	Remarks
6	Anand Parkash	Meerut College, Meerut	2874	72	
7	Jai Nand Prakash	Ditto	2825	71	
8	*Ram Swarup Vaish*	*Kashi Ram High* School Saharanpur	*2690*	67	
9	Rameshwar Dayal	N R E C Intermediate College, Khurja	2671	67	Higher Certificate as Overseer
10	Salek Chand	D Jain High School, Baraut	2641	66	
11	Mangat Rai Singhal	N A S High School Meerut	2616	65	
12	Mahipal Singh	D N High School, Meerut	2607	65	Higher Certificate as Overseer Silver Medal for Project
13	*Ramesh Chandra Garg*	*N R E C In*termediate College Khurja	*2586*	65	
14	Bhopal Singh	Meerut College, Meerut	2521	63	
15	Praduman Kumar	Ditto	2515	63	Higher Certificate as Overseer
16	Dhanesh Chandra Goel	D S Intermediate College, Aligarh	2511	63	
17	Shanti Swarup Garg	S D Intermediate College, Muzaffarnagar	2496	62	
18	*Jagdish Saran* Goel.	*S M Intermedi*ate College, Chandausi	*2473*	62	*Ordinary Certificate as* Overseer The Puran Mal Silver Medal for Public Health Engineering
19	Kunj Behari Lal	Government Intermediate College, Etawah	2468	62	Higher Certificate as Overseer

1941

No	Name	Where educated	Marks gained	Per cent	Remarks
20	Atar Singh Tiagi	D N S High School, Meerut	2462	62	Higher Certificate as Overseer
21	Mahendra Kumar	D A V College Dehra Dun	2461	62	
22	Lachchhi Ram Saraswat	D S Intermediate College, Aligarh	2456	61	
23	Jai Prakash Agarwal	S D Intermediate College, Muzaffarnagar	2447	61	
24	Tirloki Nath	D N High School Meerut	2446	61	
25	Khalilur Rahman	Government Intermediate College Moradabad	2437	61	
26	Mahendra Sharma	St Andrew s College Gorakhpur	2427	61	
27	Ranbir Prasad Jain	Durbar Intermediate College, Rewa	2420	61	Ordinary Certificate as Overseer
28	Kishori Lal Agrawal	N R E C Intermediate College, Khurja	2418	60	Higher Certificate as Overseer
29	Anand Swarup	K D A V High School Roorkee	2414	60	
30	Jagdish Chandra Gupta	Herbert College Kotah	2371	59	Ordinary Certificate as Overseer
31	Jai Prakash Sangal	Government C O High School Roorkee	2352	59	
32	Mehdi Ali	S D College Muzaffarnagar	2289	57	
33	Umrao Singh Sharma	D S Intermediate College Aligarh	2276	57	

1941

No	Name	Where educated	Marks gained	Per cent	Remarks
34	Saiyid Mehdi Naqvi	Muslim University, Aligarh	2272	57	
35	Ram Kumar Sharma	S M Intermediate College, Chandausi	2258	56	
36	Shanti Saran Agarwal	Bareilly College Bareilly	2228	56	
37	Uma Shanker	Meerut College Meerut	2210	55	
38	Om Prakash Kansal	N A S High School Meerut	2188	55	
39	Ijaz Husain	*Kali Charan High School Lucknow*	*2186*	55	Ordinary Certificate as Overseer
40	Hira Lal Gupta	D A V High School Agra	2157	54	
41	Radhay Lal Agarwal	S M Intermediate College Chandausi	2121	53	
42	Chintamani *Tewari*	Government In*termediate Col*lege, Etawah	2081	52	
43	Brij Bhushan Lal	S D E High School Muzaffarnagar	2035	51	
	Mahesh Narain (Bharatpur State)	Sardar High School, Bharatpur	2346	59	

1941

o	Name of student	Remarks
	DRAFTSMAN CLASS THIRD YEAR	
1	Sarda Ram	First Division Silver Medal and Rs 30 for Best Draftsman Qualified in Estimating
2	Churaman Gupta	First Division Silver Medal and Rs 20 for 2nd Best Draftsman Qualified in Estimating
3	Nawal Kishore	First Division Qualified in Estimating
4	Tara Chand Dh man	Second Division Qualified in Estimating
5	Muhammad Rashid Ansari	
6	Amin Ahmad Siddiqi	Third Division Not Qualified in Estimating
7	Hari Ram Vaish	Second Division Qualified in Estimating certificate awarded on 6th September, 1941 (Completed course in two years)

1942

No	Name	Where educated	Marks gained	Per cent	Remarks
	CIVIL ENGINEER CLASS, THIRD YEAR (*Full marks—7790*)				
1	Prem Manohar, B SC	Meerut College Meerut.	6225	80	Honours Diploma as Civil Engineer Council of India Prize of Rs 1,000 for General Proficiency Cautley Memorial *Gold Medal for Mathematics* (Group II) Calcott Reilly Memorial Gold Medal for Applied Mechanics General Maclagan s Prize of Books for Electrical Engineering and Physics Silver Medals for Civil Engineering (Theoretical) and Laboratory *Practice Group* IV (Practical)
2	Indra Kumar Gupta, B SC	Col Brown s School, Dehra Dun	6110	78	Honours Diploma as Civil Engineer *Thomason Memorial* Prize of Rs 250 for the Most Distinguished student who obtains the Honours *Diploma but does not* gain the Council of India Prize
3	Ajit Kumar *Chakravarti*, B SC	*Muir Central College, Allahabad*	6108	79	Honours Diploma as *Civil Engineer* Rai Bahadur Kanhaiya Lal Gold Medal for the Most Distinguished student who *does not obtain the* Council of India or Thomason Memorial Prizes Sushila and J Mitra Memorial Silver Medal for Indian student who obtains highest marks in Chemistry

1942

No	Name	Where educated	Marks gained	Per cent	Remarks
4	Mahavir Prasad, B Sc	Allahabad University, Allahabad	6021	77	Honours Diploma as Civil Engineer Silver Medal for Mechanical Engineering
5	Parshottam Saran Agrawala, B Sc	Government Intermediate College, Moradabad	6016	77	Honours Diploma as Civil Engineer Thomason Memorial Gold Medal and books worth Rs 25 for Best Engineering Designs Silver Medal for Surveying
6	Rajendra Nath Srivastava, B Sc	K P University College, Allahabad	5639	72	Honours Diploma as Civil Engineer Silver Medal for Drawing
7	Baij Nath Prasad Gupta	Ewing Christian College, Allahabad	5629	72	Honours Diploma as Civil Engineer
8	Saran Prasad Caprihan	Radhaswami Educational Institute, Dayalbagh, Agra	5564	71	Ditto
9	Cyril Carlton Gilbert	St Joseph's College, Naini Tal	5376	69	Ditto
10	Shri Krishna Garg, B Sc	B N S D Intermediate College Cawnpore	5334	68	Ditto
11	Poresh Nath Roy	Government Intermediate College Lucknow	5173	66	Ditto
12	Manohar Singh, B Sc	Allahabad University, Allahabad	5110	66	Ordinary Diploma as Civil Engineer
13	Sohan Lal Goyal	Meerut College Meerut	5085	65	Ditto
14	Jyoti Prasad Bhargava, B Sc	Christian College, Lucknow	5035	65	Ditto
15	Krishna Chandra Tayal, B Sc	Meerut College, Meerut	4968	64	Ditto

1942

No	Name	Where educated	Marks gained	Per cent	Remarks
16	Damodar Das	Meerut College, Meerut	4955	64	Ordinary Diploma as Civil Engineer
17	Salimullah Khan, B SC	Aligarh Muslim University, Aligarh	4937	63	Ditto
18	Krishna Mohan Mall, B A.	K P University College, Allahabad	4821	62	Ditto
19	Jagdish Kumar Saxena	Bareilly College, Bareilly	4788	62	Ditto
20	Ram Rich Pal Goel B SC	Meerut College, Meerut	4685	60	Ditto
21	Shamsuddin Ahmed Siddiqi, B A	Allahabad University, Allahabad	4678	60	Ditto
22	Prem Chand, B SC	Radhaswami Educational Institute Dayalbagh, Agra	4592	59	Ditto
23	Hari Mahadeo Inamdar	College of Science, Nagpur	4539	58	Ditto
24	Iftikhar Ali, B SC	Meerut College, Meerut	4536	58	Ditto
25	Prem Shankar Sinha.	Government Intermediate College, Allahabad.	4432	57	Ditto
26	Swami Dial, B.A	St Stephen's College, Delhi.	4428	57	Ditto
27	Yograj B.SC.	Meerut College, Meerut	4231	54	Ordinary Diploma as Civil Engineer The Puran Mal Silver Medal for Public Health Engineering
28	Raghbir Sahai Mathur, B SC	St Stephen's College, Delhi.	4197	54	Ordinary Diploma as Civil Engineer

1942

No	Name	Where educated	Marks gained	Per cent	Remarks
	OVERSEER CLASS, SECOND YEAR (*Full marks*—4000)				
1	Jagdish Chandra Perti	B N S D Intermediate College, Cawnpore	3154	79	Higher Certificate as Overseer Silver Medal and Rs 100 for General Merit Rai Bahadur Kanhaiya Lal Silver Medal for Best Indian student who stands first in the class The Durga Das Dutt Silver *Medal for Best Indian* student obtaining higher certificate Fairley Memorial Silver Medal for Applied Mechanics Silver Medals for Mathematics (Elementary) Descriptive Engineering, *Surveying and Workshops*, Group V
2	Ram Krishna	D A V High School, Muzaffarnagar	2905	73	Higher Certificate as Overseer Rai Bahadur Kanhaiya Lal Silver Medal for Indian student who stands second in the class Silver Medal for Project
3	Jai Prakash Gupta	Government C O High School Roorkee	2874	70	Higher Certificate as Overseer Sullivan Memorial Silver Medal for Mechanics
4	Man Bodh Singh	Udai Pratap College, Benares.	2764	69	Higher Certificate as Overseer
5	Devi Dat Chandola.	Government Intermediate College, Almora.	2757	69	Ditto
6	Hem Chandra Jain	H A S High School, Kandhla.	2744	69	Higher Certificate as Overseer Keay Memorial Silver Medal and Rs.18 for Estimating.

1942

No	Name	Where educated	Marks gained	Per cent	Remarks
7	Balbir Singh Agrawala	D A V Intermediate College, Dehra Dun	2729	69	Higher Certificate as Overseer
8	Dwarika Prasad Joshi	D A V College Cawnpore	2725	68	Ditto
9	Chandra Shekhar	K P Intermediate College Allahabad	2655	66	Ditto
10	Bhan Kumar Jain	Government C High School Gurgaon	2637	66	Ditto
11	Robindra Mohan Banerji	Bengali Tola High School, Benares	2633	66	Higher Certificate as Overseer The Puran Mal Silver Medal for Public Health Engineering Silver Medal for Drawing
12	Prem Ratan Garg	D A V College, Dehra Dun	2559	64	Higher Certificate as Overseer
13	Kamta Prasad Sharma	K D A V High School Roorkee	2548	64	Ditto
14	Suraj Mal Jain	S D Intermediate College Muzaffarnagar	2508	63	Ditto
15	Ram Chander Jain	Meerut College Meerut	2485	62	Ditto
16	Jai Prakash Agrawala	Government High School Saharanpur	2380	60	Ordinary Certificate as Overseer
17	Janeshwar Prasad Jain	D Jain High School Baraut	2379	59	Ditto
18	Robindra Pratap Singh	Government Intermediate College Fyzabad	2376	59	Ditto
19	Bharat Bhushan Mittra	S D Intermediate College Muzaffarnagar	2354	59	Ditto

1942

No	Name	Where educated	Marks gained	Per cent	Remarks
20	Naresh Chandra Jain	D A V College, Dehra Dun	2351	59	Ordinary Certificate as Overseer
21	Rama Pati Sharma	Meerut College, Meerut	2337	58	Ditto
22	Abdul Muid	Islamia College, Lahore	2304	58	Ditto
23	Chiranji Lal Gupta	A V High School, Anupshahr	2263	57	Ditto
24	Kanti Persad Kansal	Meerut College, Meerut	2215	55	Ditto
25	Kulwant Rai .	S D Intermediate College, Muzaffarnagar	2166	54	Ditto
26	Ram Chandra Asthana	Agra College, Agra	2130	53	Ditto
27	Ratan Lal	Government High School, Muzaffarnagar	2127	53	Ditto
28	Hari Narain Gupta	B N S D Intermediate College, Cawnpore	2109	53	Ditto.
[illegible]	Radhey Lal Sharma(a)	Hindu College Delhi	2093	52	Ditto
30	Hukam Singh	S D Intermediate College, Muzaffarnagar	2041	51	Ditto
31	Abdul Majid Khan	H A S High School Kandhla	2041	51	Ditto
32	Brij Bhushan Raizada	Meerut College Meerut	2030	51	Ditto
33	Ahmad Sajjad	Government College, Lahore	2000	50	Ditto

1942

No	Name of student	Remarks
	DRAFTSMAN CLASS, THIRD YEAR	
1	Rama Kant	Certificate as Draftsman in first division Silver Medal and Rs 30 for Best Draftsman Qualified in Estimating
2	Ram Singh Rawat	Certificate as Draftsman in first division Silver Medal and Rs 20 for Best Draftsman Qualified in Estimating
3	Sibte Hasan	Certificate as Draftsman in first division Qualified in Estimating
4	Jugal Kishore	Certificate as Draftsman in second division Qualified in Estimating
5	Rajendra Kumar Gupta	Certificate as Draftsman in second division Qualified in Estimating
6	Itaat Ali Khan	Certificate as Draftsman in second division Qualified in Estimating

1943

No.	Names	Where educated	Marks gained	Per cent	Remarks
	CIVIL ENGINEERING CLASS, THIRD YEAR (*Full marks*—6225)				
1	Dinesh Mohan	Meerut College, Meerut	4623	75	Honours Diploma as Civil Engineer Council of India Prize of Rs 1,000 for General Proficiency Silver Medal for Civil Engineering (Theoretical)
2	Hari Krishna	N R E C Intermediate College, Khurja	4607	74	Honours Diploma as Civil Engineer Thomason Prize of Rs 250 for the Most Distinguished student who obtains the Honours Diploma but does not gain the Council of India Prize Cautley Memorial Gold Medal for Mathematics (Group I) Calcott Reilly memorial Gold Medal for Applied Mechanics Sushila and J Mitra Memorial Silver Medal for Indian student who obtains highest marks in Chemistry Silver Medal for Drawing
3	Sheikh Abdul Hameed, B Sc	Meerut College, Meerut	4564	73	Honours Diploma as Civil Engineer, Rai Bahadur Kanhya Lal Gold Medal for the Most Distinguished Indian student who does not obtain the Council of India or Thomason Memorial Prize General Maclagan's prize of books for Electric Engineering and Physics Sil [illegible]

1943

No.	Names	Where educated	Marks gained	Per cent.	Remarks
4	M Giyasuddin Siddiqi, M SC	Lucknow University, Lucknow	4376	73	Honours Diploma as Civil Engineer
5	Prem Shankar Wadhwa, B SC	Allahabad University Allahabad	4255	68	
6	Uma Kant	Hindu University, and Engineering College, Benares	4243	68	Honours Diploma as Civil Engineer Thomason Memorial Gold Medal and books worth Rs 25 for the Best Engineering Designs Silver Medal for Mechanical Engineering
7	Parshottam Das Jain	Ewing Christian College, Allahabad	4202	68	Honours Diploma as Civil Engineer
8	Ved Swarup B SC	Benares Hindu University, Benares	4165	67	
9	Laljee Singh	Udai Partap College Benares	4111	66	Honours Diploma as Civil Engineer Silver Medal for Laby Practice (Group I)
10	Gopi Chand Jain	T C E College, Roorkee	4071	65	Ordinary Diploma as Civil Engineer
11	Madan Gopal Bhargava	Government Jubilee Intermediate College, Lucknow	4022	65	
12	Tej Bahadur Singh	Queen's Intermediate College, Benares	3997	64	
13	Prem Mohan Gupta, B.SC	Agra College, Agra	3943	63	Ordinary Diploma as Civil Engineer The Puran Mal Silver Medal for Public Health Engineering
14	Satish Chandra Goyal, B SC	Agra College, Agra	3887	62	Ordinary Diploma as Civil Engineer.

1943

No	Names	Where educated	Marks gained	Per cent	Remarks
15	Dharam Parkash	Allahabad University Allahabad	3858	6[illegible]	
16	Ram Chandra Sharma	Ditto	379	61	
17	Shambhu Prasad Chandola	Ditto	3794	61	
18	Chandra Prakash Agarwala	Maharaja's College Jaipur	3768	61	
19	Krishna Chandra Goyal	Allahabad University Allahabad	3745	60	
20	Shamshur Rahman	Meerut College Meerut	374[illegible]	60	
21	Sitanshu Mohan K[illegible]r	Government Intermediate College Allahabad	3630	58	
22	Shafiq Ahmad	Meerut College Meerut	3619	58	Ordinary Diplomas Civil Engineer
23	Tarif Singh Rajpal B Sc (Delhi)	Hindu College Delhi	3594	58	
24	Mahesh Chandra Johri	Allahabad University Allahabad	3546	57	
25	Om Prakash Garg	Meerut College Meerut	3545	5[illegible]	
26	Jagdish Prasad Goyal B Sc	Government College Ajmer	3544	5[illegible]	
27	Shyam Nath M[illegible]	Lucknow University Lucknow	3456	56	
28	J[illegible] Jain	T. C. E. College Roorkee	34[illegible]9	53	
29	B[illegible] B Sc	Meerut College Meerut	335[illegible]	54	

1943

No	Names	Where educated	Marks gained	Per cent	Remarks
30	Chaudhri Farhatullah *Kirmani* B Sc	Muslim University, Aligarh	3339	54	*Ordinary Diploma as Civil Engineer.*
31	Nasiruddin Ahmad	Meerut College, Meerut	3281	53	
32	*Purushottam Lal* Vijay.	*Agra College, Agra*	3266	53	
33	Muhammad Abdul Hafiz	Government Intermediate College, Allahabad	3244	52	
34	Chandra Bal Jain	Meerut College, Meerut	3235	52	

1943

No	Names	Where educated	Marks gained	Per cent	Remarks
	OVERSEER CLASS, SECOND YEAR (*Full marks*—4150)				
1	Lakshman Swarup Mital	D S Intermediate College, Aligarh	2969	72	Higher Certificate as Overseer, Silver Medal and Rs 100 for General Merit Rai Bahadur Kanhya Lal Silver Medal for Best Indian student who stands first in the class Sullivan Memorial Silver Medal for Mechanics The Durga Das Dutt Silver Medal for Best Indian student obtaining Higher certificate Silver [illegible]
2	Parmatma Sharan Kansal	S [illegible]			[illegible] student who stands second in the class Keay Memorial Silver Medal and Rs 18 for Estimating
3	Lakshman Swarup Garga	Government Intermediate College, Jhansi	293[illegible]	71	Higher Certificate as Overseer The Puran Mal Silver Medal for Public Health Engineering Silver Medal for Descriptive Engineering
4	Lakshmi Datt Gairola	D A -V. Intermediate College, Dehra Dun	2732	66	Higher Certificate as Overseer Silver Medal for Workshop Group V.
5	Shugan Chandra Vaish	S D Intermediate College, Muzaffarnagar	272[illegible]	[illegible]	Higher Certificate as Overseer Fairly Memorial [illegible] Medal f[illegible] Mechan[illegible] Medal f[illegible] Mathem[illegible]

1943

No	Names	Where educated	Marks gained	Per cent	Remarks
6	Om Prakash Gupta	Meerut College, Meerut	2703	65	
7	Rama Surat Tewari	Government Intermediate College, Fyzabad	2621	63	
8	Anand Swarup Sharma	S M Intermediate College, Chandausi	2561	62	
9	Pitambar Das Visharad	S D College Muzaffarnagar	2542	61	Higher Certificate as Overseer
10	Satish Chandra Goyal	Ditto	2531	61	
11	Jagan Nath Parshad	N R E C College, Khurja	2514	61	
12	Gauri Shanker *Bansal*	Ditto	2511	61	
13	Sheikh Aijaz Husain	Islamia High School, Bareilly	2466	59	
14	Khairat Husain	B N High School, Akbarpur (Fyzabad)	2464	59	
15	Brij Mohan	Meerut College, Meerut	2436	59	
16	Muhammad Mustafa Khan	Ewing Christian College, Allahabad	2422	58	Ordinary Certificate as Overseer
17	Ram Saran Das	Meerut College, Meerut	2377	57	
18	Ravi Datt	S D College, Muzaffarnagar	2343	56	
19	Anand Parkash	Ditto	2336	56	
20	Karori Mal Gupta	D Jain Intermediate College, Baraut	2315	56	

1943

No	Names	Where educated	Marks gained	Per cent	Remarks
21	Satya Pal	S D College Muzaffarnagar	2311	56	Ordinary Certificate as Overseer
22	Ram Ratan Agarwala	Thomason College, Roorkee	2291	55	Ordinary Certificate as Overseer Silver Medal for Drawing
23	Shanti Swarup Tayal	Meerut College, Meerut	2272	55	Ordinary Certificate as Overseer (Nos. 23–32)
24	Prem Prakash Bansal	H A S High School, Kandhela	2258	54	
25	Mahabir Singh	Meerut College, Meerut	2237	54	
26	Prem Prakash Goyal	Ditto	2235	54	
27	Ram Krishna	St Charles High School, Sardhana.	2233	54	
28	Syed Shamim Hasan	Faizam High School, Meerut	2187	53	
29	Gian Parkash Goyal	D A V High School, Muzaffar nagar	2173	52	
30	Kabool Chand Gupta	S D Intermediate College, Muzaffar-nagar	2141	52	
31	Parmeshti Parshad Jain	Government High School, Saharan-pur.	2139	52	
32	Ratan Swarup Mital	Herbert College, Kotah	2138	52	
33	Shri Krishna	Meerut College, Meerut	2123	51	Ordinary Certificate as Overseer, Silver Medal for Project.
34	Shanti Swarup	T. C. E College, Roorkee	2118	51	Ordinary Certificate as Overseer (Nos. 34–35)
35	Shri Krishna	N R E C. Intermediate College, Khurja.	2081	50	

1943

No	Names	Where educated	Marks gained	Per cent	Remarks
36	Mahabir Parsad	Meerut College, Meerut	2072	50	
37	Hukam Chand	Thomason College, Roorkee	2061	50	
38	Jai Chand Jain	Meerut College, Meerut	2046	49	
39	Onkar Parshad Agarwal	K K Intermediate College, Lucknow	2045	49	
40	Radhe Lal	*Ewing Christian* College Allahabad	2012	48	
41	Vishnu Kant Gupta	Kashi Ram High School, Saharanpur	2002	48	
42	Kanhya Lal	D N Intermediate College, Meerut	1959	47	Ordinary Certificate as Overseer
43	Indra Chandra Jain	Government C O *High School* Roorkee	1946	47	
44	Nazar Muhammad Khan	Christian College, Lucknow	1940	47	
45	Sarva Shakti Parkash	S D Intermediate College, Muzaffarnagar	1906	46	
46	Jagdish Prasad *Gupta*	S S M Intermediate College, Chandausi	1879	45	
47	Abdul Hamid Beg	Islamia College, Peshawar	1870	45	

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Draftsman, 2nd Divi-

raftsman, 2nd Divi-

raftsman, 2nd Divi-

differentiation from other boys. But he said the same objection applied equally to the practice of pupils living with whole-time European guardians on which a few of the largest States insisted and many parents would not send their sons to the College at all if they did not live with the Principal or European Masters. The Resident said that he did not regard the danger of differential treatment as the consideration of most importance; he was more worried about the danger of creating or perpetuating a vested interest on the part of the masters in securing

1943

PERCENTAGE OF MARKS OF STUDENTS

The following table shows the percentages of marks gained by the various classes for the last five years and the numbers that qualified

Year	Civil Engineer Class									Overseer Class					
	3rd Year			2nd Year			1st Year			2nd Year			1st Year		
	Highest marks	No qualified	Average marks	Highest marks	No qualified	Average marks	Highest marks	No qualified	Average marks	Highest marks	No qualified	Average marks	Highest marks	No qualified	Average marks
1938-39	73	24	59	78	31	64	81	34	66	76	44	62	86	41	69
1939-40	75	26	65	83	32	63	79	30	65	82	41	61	85	47	
1940-41	82	32	66	82	30	64	75	34	64	82	44	62	80	37	59
1941-42	80	28	66	78	35	62	79	35	62	79	34	60	78	48	58
1942-43	74	34	62	80	34	59	71	36	60	72	47	55	77	42	59

ANNUAL REPORT

FROM

RAI BAHADUR MADAN GOPAL SARDANA, PRINCIPAL,
THOMASON COLLEGE OF CIVIL ENGINEERING
ROORKEE,

TO

THE DIRECTOR OF PUBLIC INSTRUCTION,
UNITED PROVINCES,
ALLAHABAD

Dated Roorkee, the 15*th July* 1943

SIR

I HAVE the honour to forward herewith the Annual Report on the Thomason College of Civil Engineering, Roorkee for the session 1942-43 together with the statement of accounts for *the financial year ending* 31st March 1943

ADMINISTRATION

2 The following non-officials and officials were members of the College Advisory Council during the session

(*a*) Mr G Lacey, B SC, M INST C E, C I E, Chief Engineer, Irrigation Branch, United Provinces, as well as representative of the Institution of Civil Engineers, London from 20th July 1942 to 15th January 1943 and thereafter Mr S T H Munsey, B SC, I S E, C I — *President*

(*b*) Mr Mahabir Prasad, B SC, I S E, Chief Engineer, Buildings and Roads Branch, United Provinces, from 20th July, 1942

(*c*) Mr J C Powell Price, M A, C I E, I E S, Director of Public Instruction, United Provinces, up to 30th April 1943, W G P Wall, Esq, M SC, Director of Public Instruction, United Provinces, from 1st May, 1943

(*d*) Dr N N Godbole, M A, B SC, PH D (Berlin), Professor of Industrial Chemistry and Dean of the Faculty of Technology Department of Industrial Chemistry, Benares Hindu University nominated by the United Provinces Government as representative of the University Education

(*e*) Mr H G Trivedi M I E, A M I C E, S E P H, Engineering Department, United Provinces represented the United Provinces Branch of Institution of Engineers, India

(*f*) Major Raja Bahadur Durga Narain Singh, M L A, of Tirwa District Farrukhabad and Major Nawab Mohammad Jamshed Ali Khan, M B E M L A, Baghpat represented the United Provinces, Legislature

(*g*) Rai Bahadur Madan Goyal Cardana Principal, Thomason College of Civil Engineering Roorkee—*ex officio Secretary*

No meeting of the Advisory Council was held during the session

BOARD OF STUDIES

The Board as in the past years met on various occasions during the session and assisted the Principal by offering their advice and opinion on several matters connected with the internal working of the College

COLLEGE STAFF

The following changes occurred in the College Staff during the session A temporary post of Lecturer in Civil Engineering was created and Mr K S Misra was appointed to it with effect from 18th January, 1943

Mr C P Mittal was appointed Personal Assistant to Principal from 18th January 1943

Mr P C Sen Gupta was on leave from 22nd February to 4th March 1943

Mr B L Sharma was on medical leave from 16th May 1943

DEPARTMENTS

The Departments into which the College is divided remained unaltered

CIVIL ENGINEERING

The appointment of a temporary Lecturer in Civil Engineering Department relieved the Civil Engineering Staff to some extent but one more lecturer is still required to cope with the work

Projects—The 3rd year students were given the usual minor and major ' projects

The minor project was for a school building

The major project was originally set by Mr A V Gupta S E I B but as the survey work lay in an area where plague had broken out it was not considered advisable to send the students there The project, therefore, had to be set by Mr. V G Garde Assistant Professor of Civil Engineering of this College and was examined by Mr H G Trivedi Additional Superintending Engineer, Public Health Department This was for the water supply of Jwalapur Town and the examiner s report is as follows

(1) **Introductory**—The students have made efforts to put in a large amount of work in the short time given to them for completing the projects, which rather lack in originality The work of each group is much too similar This may be per missible in the case of specifications calculations and some estimates but copying of reports *verbatim* cannot be excused This has occurred in the case of a few students and they have consequently suffered for it

(2) **Selection of site**—Two sites have been selected by the students for the location of their waterworks, one near the Railway Station and the other near Aryanagar The former

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(2) **Selection of site**—Two sites have been selected by the students for the location of their waterworks one near the Railway Station and the other near Aryanagar The *former*

site has been favoured by the majority, being high ground One special reason advanced in favour of this site is, that the ground level being higher by about 12 feet at this place, the pumping head for the centrifugal pump will be reduced Those students who used this argument, however, did not realise that due to the high level of the site, the lift for the air lift pump, which is much less efficient than the centrifugal pump, will be increased Consequently, as the total lift both for the air lift and the centrifugal pumps is the same at both the places the working charges of the plant will be higher in the case of the higher level site

(3) **Pumping plant layout arrangement**—For the layout of the pumping station and the pumping plant, the arrangements at Mayapur and Hathras Waterworks have been blindly followed Only two groups have tried to vary the Hathras arrangement and they have been given credit for it

(4) **Tube-wells**—It would seem that the rest water level for the proposed tube wells has been arbitrarily assumed much higher by all the students without any reference to the low water levels of the existing ordinary wells in the locality This will considerably affect the lift for the compressed air plant and so the pumping charges

(5) **Pumping plant**—Although three centrifugal pumps have been invariably provided, some of the students have proposed only two compressors, each of which to be of sufficient capacity to work both the tube wells together This is not a good arrangement, as, in the very beginning, it will be sufficient to pump only one well at a time to meet the demand Even *when the population has increased* and *the proposed maximum* supply is made available, it may be found necessary sometimes to work only one well Consequently the provision of three compressors just like the three centrifugal pumps is desirable

(6) **Pumping Station**—All the students who have based their design on the arrangement at Mayapur pumping station, have used two weir chambers for measuring the discharge from the two tube wells This is a very wasteful method only one combined inlet pipe should have been led into one weir chamber

In the design of those students who have based their proposals on the Hathras arrangement the layout of suction and delivery pipes of the centrifugal pumps could be very much improved The pumps should have been lowered still further to obviate the necessity of foot valves being used

(7) **Overhead Storage**—An overhead storage capacity of round about one lakh gallons has been provided by each student This is quite reasonable Some of the students have used two overhead tanks but for a small place like Jwalapur only one tank should be enough

The design of the overhead tank however leaves much to be desired Most of the students have designed it for too great a depth of water this should not have exceeded 11′ to 12 The superstructure in many cases looks flimsy and in some projects a load of over 8 tons per sq ft has been allowed on brick masonry which is on the high side

Most of the students have provided two outlet pipes from the tank This is unnecessary a single supply main should have been taken up to the junction point from which the mains for the two zones take off

A platform at the level of the bottom of the tank is essential for inspection purposes but it is conspicuous by its absence in every design

(8) **Distribution system**—The distribution system seems to have been fairly well designed While the four tap standposts have been provided with storage tanks the one tap standposts

are mere standpipes It would have been preferable, had these also been provided with small storage tanks

(9) **Drawings**—The draftsmanship of the class as a whole is good with the exception of a few students, who have shown rather poor draftsmanship The students have attempted to use fine lines even on the distribution plans, on which the mains should be shown in sufficiently thick lines and the lettering should be bold

None of the long section plans are up to the mark, as most of them are incomplete in some respect or another

(10) **General**—On the whole, the students have made a good attempt and have put in a considerable amount of work in the short time available to them The reports written by nos 1, 3, 10, 13 and 19 are very good reports and the groups led by nos 3 and 13 have shown some originality in the design of the layout of their pumping stations

The draftsmanship of nos 3 and 13 is first class The specifications put up by no 13 in which he has followed the standard specifications of the Public Health Department, are much above the average and he has been given credit for them The estimates submitted by no 3 are very well arranged and his work is very neat and tidy from the beginning to the end Consequently no 3 scores the highest place and stands first by nineteen marks

Visit to works—As far as the funds permitted, visits to various engineering works were arranged for the Civil Engineer Class, 3rd Year students The works visited by them are as given below

Civil Engineering Class, 3rd year—Sewage pumping station at Kilokri Sewage disposal works near Okhla Delhi Waterworks intake at Wazirabad and water purification works at Chandrawal

Civil Engineer Class, 2nd year—Timarpur and onwards up to Kahbari or Gurdwara with occasional halts along the Ridge to see rocks in connexion with their instruction in Geology

The allotment for this purpose is tight and it is very necessary that it may be increased

Survey—The Survey camp of 2nd Year Civil Engineer class was held in Landhaura in 1943 and the students received very useful practical instruction in triangulation and subsequent map work during the course of three weeks

PURE AND APPLIED MATHEMATICS AND PHYSICS

The work in this department was carried out satisfactorily as in the past

DEPARTMENT OF MECHANICAL AND ELECTRICAL ENGINEERING

The work in Electric Engineering was carried out as usual The Electrical Engineering portion of this department was again very heavily worked owing to the continuance of the training of War Technicians whose number rose as high as 500 at one time From 1st April, 1943 the Technical Training Scheme was wound up and all the technicians with the exception of Surveyors were transferred to other centres In its place the 1st Central Technical Unit of Civil Pioneer Force place the 1st Central Technical Unit of the Civil Pioneer Force was formed and their training started in the College Workshop This entailed very heavy work on Mr B L Sharma Assistant Professor of Mechanical and Electrical Engineering who had to organise the Unit from its start

OVERSEER CLASS

The situation as regards the Staff remained the same as in the past years

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Civil Engineering Class 3rd year—Sewage pumping station at Kilokri Sewage disposal works near Okhla Delhi Waterworks intake at Wazirabad and water purification works at Chandrawal

Civil Engineer Class 2nd year—Timarpur and onwards up to Kalibari or Gurdwara with occasional halts along the Ridge to see rocks in connexion with their instruction in Geology

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OVERSEER CLASS

The situation as regards the Staff remained the same as in the past years

The new Overseer class syllabus was in force in both the classes

The 2nd year students prepared the following designs in the class

(1) Distributary Fall
(2) Drain Syphon
(3) Design of metered Gauge
(4) Culvert
(5) Design of a T beam Culvert
(6) Plate Girder
(7) Design of an Inspection House

The project prepared by the 2nd year Overseer class this year was a proposal for building a hostel to accommodate 60 students with its subsidiary buildings, water supply, sanitary fittings electric installation and approach road The site for the building was the vacant plot lying to the south west of the old Racquets Court The project was set by Mr P S Bhatnagar Executive Engineer, Buildings and Roads Branch

This year the 2nd Year Overseer class students could only visit the Ganges Canal headworks at Hardwar The importance of such instructional tours for the proper training of overseers is being stressed every year but funds are not available to enable the students to visit different types of Engineering works

DRAFTSMAN CLASS

The control of the class remained under Mr P L Sharma, Lecturer in Drawing

The session commenced with 16 students in all the three years but three more students joined the 1st Year class later on

The name of one student was removed from the class register due to his long absence without permission

The students were taught according to the revised syllabus

The 3rd Year students learnt Estimating with Overseer Class II Year for the first time

SPORTS AND REGATTA

The annual sports were held on Friday 18th December, 1942, and the Annual Regatta on 29th May, 1943

The Staff and students were "at home" on the former occasion

The annual sports were run on the same lines as in previous years

The outstanding performance of the year was C. P Quiterio who won most of the prizes and the Lion Trophy for the Individual Athletic Championship of the College

The games of tennis hockey and football continued to be popular among the students

The students also took sufficient interest in cricket but the team, however, was not strong this year.

Squash remained a very popular game in the College but due to the difficulty of obtaining balls the game could not be carried on properly

Boating continued to be favourite with the students and they took a keen interest in the Regatta All the usual races were run except one as we are short of oars and suitable wood for them is not available.

HEALTH

The health of the students on the whole has been good during the year There were three cases of typhoid which appeared to be due to the use of contaminated water in U. T. C Camp near Delhi

The discipline of the College on the whole has been good.

CIVIL ENGINEER CLASS STUDENTS' CLUB

The Civil Engineer Class Club has completed another successful year. The income of the Club has remained

practically stationary whereas the cost of everything has gone up very high Some of the amenities under Indoor games Music etc had therefore to be curtailed to make the two ends meet

The billiard table was reconditioned during the year and negotiations are under way for securing another table for the Club so that it may be used by beginners to save the recon ditioned table from early deterioration

The office bearers showed greater interest in the Club affairs and in keeping the accounts properly

MESS

The Civil Engineer Common Mess is quite popular and the number of members this year was 62 The Dining Hall has been enlarged and can now accommodate all the students of the Civil Engineer Class

OVERSEER CLASS CLUB

The Club serves the useful purpose of a common meeting place for the Overseer students The rules for the election of office bearers had to be slightly changed for more efficient management of outdoor games The outdoor games Secre taries are now being nominated by the President from among the best players

The indoor games seems to be more popular than outdoor games More enthusiasm for outdoor games is desired

THE LION MAGAZINE

Owing to scarcity of paper and increased printing charges difficulty is being experienced in getting the magazine printed Only one issue could be got ready this year

THOMASONIAN SOCIETY

There was great improvement in the quality of the papers read in the Thomasonian Society this year In all eight meetings were held in which 32 papers were read 24 of which were on technical subjects Twenty one students took part in reading the papers as against 14 last year

So far owing to the paucity of the papers a latitude was allowed to the students in the choice of subjects and in the model of expression As the number of papers increased they were scrutinized by the President before accepting them for reading A few of the papers submitted had to be rejected

The system of reading technical papers instead of debates on general subjects was newly introduced and the improvement shown this year gives hope that the standard of papers will soon become sufficiently high in keeping with the reputation of the College

Mr P C Wadhwa of the 3rd Year class won the Lacey Prize for the year He read three papers all of which were on technical subjects connected with Railway Engineering

BOOK DEPOT

Government Branch Press Book Depot where students can obtain copies of the text-books recommended by the College at 12½ per cent off published prices, continues to work satisfactorily

COLLEGE MANUALS

Due to scarcity of papers it has not yet been possible to get any revised manuals printed

LIBRARY

It is very difficult to get books from abroad Effort, however, was made to secure as many books as possible

Eleven candidates in the Civil Engineer class 1st year and nine in the Overseer class 1st year have been admitted extra on condition of volunteering for War services after the completion of the course

GENERAL

Various improvements are necessary in the model rooms and laboratories of this College but due to financial stringency it is not possible to do much in this connection

ANNUAL CONVOCATION

The annual Convocation and Prize giving was held on Thursday the 15th July 1943 at 11 a m in the Convocation Hall Flt /Lt Sir William Stampe, C I E , R A F V R , I S F , (retired) Irrigation Advisor to the Government of India very kindly presided The Principal Rai Bahadur Madan Gopal Sardana opened the proceedings with the following address

SIR WILLIAM STAMPE LADIES AND GENTLEMEN—

On behalf of the College Staff and students it is my pleasant privilege to extend a most hearty welcome to you as our Convocation President This is the second occasion that you have honoured the College by presiding over this function the previous instance being when you distributed the prizes in 1935 It is indeed kind of you to accept our invitation in spite of your own heavy work and come to the Convocation despite trying travelling conditions during this weather You have had a long connection with this College, first as a Professor of Civil Engineering and then as Chairman of the Advisory Council when you gave us the benefit of your ripe experience

My warmest thanks are also due to the visitors, officials and non officials who have graced the function today and thus shown how interested they are in the cause of this institution

Nowadays due to world conditions it is not easy to get new apparatus for laboratories and new books We are however doing our best with the material available and so far the training of the students has not been allowed to suffer

As mentioned by me last year the Draftsman class is now following the revised course of study The batch which is now passing out has benefited from it to a limited extent as they studied Civil Engineering for less than two sessions only From the next year we hope to turn out a better class of Draftsman than in the past as they would have studied the new course in all the three years

The College continues to train the British Non Commissioned Officers to work as Sub Divisional Officers in the Military Engineering Service The fifth batch is just passing out and a fresh batch will be joining the College on the 19th July

The scheme for training War technicians remained in full swing till the end of March last At one time the total number of technicians went up to 511 as against a total sanctioned strength of 650 In all 1 078 technicians were sent to Military Units after passing trade tests In March last the Labour Department decided to abolish Roorkee as a Civil Centre and to form the 1st Technical Pioneer Force Unit at this place This scheme is now in force Each pioneer will be trained in two trades and they will be fitters *cum* turners, fitters *cum*-machinists fitters *cum* blacksmiths and carpenters *cum* electricians Practically all the technicians except those learning Survey were transferred to other centres by the 15th April, and craftsm

sent here from all over In

have joined the Unit and it is expected that the total strength of 512 i e two companies will soon be made up The College thus is doing its best to help in the War work

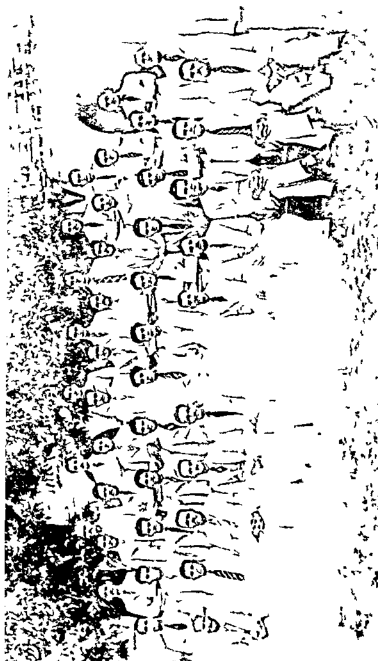
The Old Boys Association is steadily progressing Its strength has now increased to 130 members The Old Boys Day was celebrated this year on the 19th December on the sports day Some of the old boys came from *long distances and the function was a great success* It has now been decided to celebrate the annual function in future on the Convocation day I belive that the change in the time is beneficial as the presence of so many old boys to day in this hall is very encouraging

The College again, did extremely well in the competitive examination of the I R S E and Central P W D Out of the first twenty positions nine were secured by the students of this College standing 1st 3rd, 5th, 7th, 8th 15th, 16th, 17th, and 18th in order of merit, Madras being the next best province securing 3 positions Our heartiest congratulations are due to Mr O P Mittal who stood first and also to others who have gained competitive vacancies

The students continue to take a keen interest in all the games The inter class matches in football and hockey are very popular and are instrumental in keeping up the interest of the students in these games

The Civil Engineer Common Mess is retaining its popularity, the number of the members being 82 as against 77 last year The Dining Hall has been enlarged and is now quite sufficient to accommodate all the students of the Civil Engineer class

The health of the students, on the whole, has been *good during the year* Three cases of enteric fever



occurred among the Civil Engineering class students in the month of January after their return from U T C camp All precautionary measures were taken During the month of April, plague broke out in an adjoining town Prompt measures were taken and no case occurred in the College area

The Government have sanctioned a Lecturer in Civil Engineering in place of Mr Jiwan Lal Instructor, Overseer class, who is now being sent back to the department One more lecturer has been sanctioned for the duration of war to help the staff in the extra work which they are doing in connection with the training of the British Non Commissioned Officers and Technical Scheme The posts have been advertised by the Public Service Commission and selection will be made in due course As a temporary measure Mr K S Misra Personal Assistant to Principal has been made a temporary lecturer and Mr C P Mittal has been appointed in his place No other change occurred in the Staff this year I now with your permission, Sir, review the work of the last year

The Council of India Prize of Rs 1 000 which is awarded to the best student of the Civil Engineer Class passing out has been won by Mr Dinesh Mohan He has obtained 74 2 per cent marks and has also won the Silver Metal for *Civil Engineering*

The Thomason Prize of Rs 250 awarded to the second best student has been won by Mr Hari Krishna who has obtained 74 per cent marks and secured the following prizes

(1) Cautley Memorial Gold Medal for Mathematics Group I

Memorial Silver Medal

highest mark

on high ground One special reason advanced in favour of this site is, that the ground level being higher by about 12 ft in this place, the pumping head for the centrifugal pump will be reduced Those students, who used this argument however, did not realise that due to the level of the site the lift for the air lift pump, which is much less efficient than the centrifugal pump, will be increased Consequently, as the total lift both for the air lift and the centrifugal pumps is the same at both the places, *the working charges of the plant will be* higher in the case of the higher level site "

On the whole the students have made a good attempt and have put in a considerable amount of work in the short time available to them The reports written by nos 1, 3, 10, 13, and 19 are very good and nos 3 and 13 have shown some originality in the design of the layout of their pumping station

We are indebted to Messrs A V Gupta and H G Trivedi and to Mr P S Bhatnagar, Executive Engineer, Lucknow Provincial Division who examined the Overseer Class project for the trouble they have taken in setting and examining the projects

In the 3rd year Civil Engineer Class all the students have passed except one who fails in the aggregate Out of 34 students 9 have obtained ' Honours Diploma, *The students have done very well* in the final examination papers set by external examiners The first student has obtained 76 1 per cent marks the average marks of the whole class being 56 7 per cent

In the II year class out of 34 students 24 have passed and the result of the remaining ten students will be announced later

In the 1st year class out of 36 students 5 L.

They will be allowed to repeat the course

In the 2nd Year Overseer class all the students except one have passed, who will be permitted to repeat the course Mr Laxman Swarup Mittal stands first in the class obtaining 71 5 per cent marks He has also won Silver Medal and Rs 100 for general merit Rai Bahadur Kanhya Lal and Durga Dass Dutt medals for the best Indian student obtaining higher certificates and Silver Medals for Mechanics and Surveying Mr Par matma Saran Kansal stands second and has carried off Rai Bahadur Kanhya Lal Silver Medal for Indian student who stands second in the case and Keay Memorial Silver Medal and Rs 18 for Estimating

In the 1st Year Overseer Class, out of 42 students two have failed and they can repeat the course

The Annual Sports were held on 19th December, this year The Lion Trophy for individual championship of the College was won by Mr C P Quiterio a student of Civil Engineer 2nd Year class and the Runner up Cup was won by Mr M G Siddiqi of Civil Engineer 3rd Year class The Bradshaw Smith Challenge Cup for Cross Country Race was awarded to Mr Aftab Ali Qureshi a student of the Draftsman class Vizianag ram Cup was won by Mr K C Govil of Civil Engineer 3rd Year class and Barnett Cup by Mr Shamim Hasan of the Overseer 2nd Year class The Civil Engineer 2nd Year class proved the best class of the session and Stampe Cup for Inter class Championship was won by them

The Annual Olympic contest with the Royal Engineers ended in a draw this year, the Royal Engineers and the College getting equal points We hope to have better luck next year The annual College negatta was held on May 29 this year. The students continued taking keen interest in Boating In spite of the shortage of oars it

was possible to run this year all the usual four races in addition to the Swimming Race There is one feature of this year's regatta which needs a special mention For the first time in the history of the College, a student of the Overseer class won the "Boating Cup" for the best oar in the 3rd Year Civil Engineer and 2nd Year Overseer classes

The U T C has seen considerable changes this year The strength of the platoon has been increased from 48 to 64 and it is now attached to Sappers and Miners Unit The training which the students are now getting is in line with their profession and will be very useful to them as Engineers The Annual Camp was again held at Delhi this year and our platoon was the best in the Camp

The College is maintaining its popularity and this has *exhibited itself in a large increase in the number of* candidates offering for competition in the entrance examinations The total number this year was 326 for the Civil Engineer Class and 359 for the Overseer Class These figures are the largest in the history of the College the previous maxima in the two cases being 260 and 319 respectively As usual only 30 top candidates will be admitted to the Civil Engineer Class and 40 to the Overseer Class

Before closing my report I should like to say a few words on the Technical Education The War which has been going on for the last four years has now taken a very favourable turn The head of the proud Hun now lies low victory is in sight and schemes for post war reconstruction are being got up In this Engineers have to play a very important role and it is essential that to turn out efficient men the entire method of Technical Education should be thoroughly re-considered and

hauled We will require many more technical institutions to meet the post war demand but those and the existing ones have to be organised and run on proper lines There has to be some uniformity in the method of training and standards of teaching and examination The standardization of this kind should not be limited to any one province but should embrace the whole of India Also at present we are generally catering for departmental needs only with the result that there is no specialization of proper standard in any of the branches of Engineering In the post war India it would be necessary to impart specialized training of a high standard if we want to turn out efficient Engineers to meet her needs We have therefore to consider whether it will not be advisable to devote the last year of the Diploma or Degree course entirely to a specialized study of the branch of Engineering which a student may select intensive theoretical training being given in the previous years In the end I express my heartfelt thanks to all the members of the staff who by their close co operation and unstinted hard work have helped me in running the college I am specially indebted to those who had to sacrifice their vacation for the sake of training British Non Commissioned Officers and War Technicians

With your permission I now request you Sir to address the assembly and give away the prizes

RAI BAHADUR SAHIB GENTLEMEN OF THE THOMASON COLLEGE LADIES AND GENTLEMEN—

It is a great pleasure as well as an honour to me to be asked to preside at your Convocation today I have always been interested both personally and as an engineer in this College and its environment I associate in my pleasant memories of the College its happy relations with the distinguished and gallant corps which has

always been in Roorkee and in which I had the honour of taking a minor part as a Lieutenant in the last War

As you said Mr Principal it is a privilege to us to have the Commandant and others of the King George's Own Bengal Sappers and Miners here today.

We are also pleased to have my old chief Raja Jwala Prasad and my friend Sir Stanley Howard and his wife with us representing the sister service, the Indian Forest Service

I have listened to your remarks with great interest and I should like to take up the various points you have mentioned, especially in regard to post-war engineering training with you afterwards in personal conversation and then, if you wish it to represent what I am sure will be our joint views in the appropriate administrative quarter In this connection we should all remember what the Prime Minister said the other day in a speech about post-war activities I will quote from a recent leader in the *Statesman*

'The future of the world is to the highly educated races, who alone can handle the scientific apparatus necessary for pre-eminence in peace or survival in War"

Although it would have been more thrilling to me to have addressed you today as Military Engineer cadets instead of Civil Engineer students I realize that the youth of India must follow the spontaneous call of its own heart and mind I hope also to show you in a few minutes what scope there is for all of you both in the eternal campaign against those ever present enemies of humanity—scarcity and want and in what we now hope is the more transient fight against the Hun and the Jap who still threaten our frontiers I shall address you if, I

may, on the subject of dynamics which interests all engineering students indeed all students of human affairs I trust in so doing I shall not be looked on as intruding on the territory of my old friend Dr Puri your mathematical professor

Six weeks ago, I described the 'moving waters'' we had seen continuously below us during a recent air voyage over Central Africa and up the Nile to Cairo and India I said how the failure to develop the latent power in these rivers with all it might mean to the millions who live (mostly in squalor) in the valleys around, had left us with the disturbing impression that the parent administrations concerned had not done their duty by the young countries in their charge In the acedemic language of your College, the undeveloped potential of these rivers indicated a lack of dynamic force inertia—on the part of the Governments responsible

As it will soon be your mission as irrigation engineers to convert river potential into useful energy a short review of the general problems ahead of you—and certain *human phenomena affecting their solution*—*will not* I think, be out of place this morning

During a war, if I make a few allusions to contemporary military history and quote some sayings of the World's great captains, I shall not perhaps be irrelevant Years ago when on the staff of this College, I remember telling a third year class who were learning 'report writing' *that quotations were only justified on three* grounds, (i) they must be relevant (ii) they must elucidate the issue and (iii) most important of all—they must stimulate the mind of both writer and reader Otherwise, you can take it that quotations are anathema to busy modern readers

Dynamics (whether physical or psychic) is the study of force in motion and as Newton said, force to be effective, *must* be proportional to the mass moved and the "change of speed" imparted. Statics, on the other hand, deals with inertia, both physical and mental, and human history especially that of war (which is or should be a highly dynamic affair) shows conclusively that the "static" commander has never got anywhere. Nor has the static engineer for that matter. Maginot, if the name lives at all, will for ever connote defeat—defeat too in its *most sinister form*.

And how near Maginot and his cronies brought us to complete defeat to annihilation. Protected as our so-called leaders thought by our static defences, publicly protesting at the mere idea of casualties, scattering leaflets instead of lead, preferring shelters to spitfires, exports to effort committees to action and shops to ships, Chamberlain's England slept whilst the crafty Hun first prostituted the French and then sprang. It was not till Rommel roared through the Ardennes that England awoke and—just in time—flung off her misleaders, called Churchill and became dynamic.

A few instances may be recalled of dynamic actions in which the personal gallantry of the few had so often to make up for the neglect of preparation by the many.

The little Jervis Bay barely armed at all steaming in to her certain destruction to delay the mighty Scharnhorst whilst her convoy scattered to safety, the brave Bhagat—a former student of this College—whose amazing example inspired his Sappers under withering fire to clear the road to Keren. Commander Esmond flying his obsolete swordfish unflinchingly to certain death in a gallant attempt to wing the battle cruisers—[illegible]

of the saddest of this war s glorious galaxy of deeds All these dynamic doings will ring through history as long as martial memories continue to stir the breasts of men

I will mention one more historic deed that came before my personal notice A year or so ago my cadets and I saw 13 Lancasters flying southwards in perfect formation like great albatrosses against an azure sky on their way to Augsberg to delay for months with their deadly load the submarine engine programme As they passed over the aerodrome our engineers computed to a nicety the thermal output of these 52 engines—the power equivalent of 65 000 horses tearing through the skies—but I defy them to evaluate the moral horse power that flowed from Nettleton s cool hand into that control column which kept the squadron on its cruel course They flew well knowing the danger at roof top height for 1 500 miles across hostile territory beset with fighters and flak Only four Lancasters came back but their dynamic deed was done and countless allied lives and treasure saved by the destruction they wrought We were lucky even from the ground to see those young airmen and one could not help misquoting Blake s lines about the tiger —

What immortal hand or eye
Can gauge such glorious gallantry '

I recall these deeds here partly because they are ideally dynamic and partly in view of what will be said later about the formation of an Indian Air Training Corps which it has been suggested should be started in this College I feel sure that some of you who would like to emulate in the air Bhagat s example will join this corps if and when it is formed But for the moment, I will

revert to your main mission—the dynamic handling of hydraulic problems

A successful engineer, especially in India where he will always be up against the forces of nature in their most violent forms must possess three qualities to fit him for the task head Firstly, he must have imagination to appreciate the task, its aims, its inherent difficulties and their solution Secondly he must possess or be given the technical training necessary to achieve his aim Lastly having prepared his plan he must have confidence and resolution to pursue his object relentlessly to the end in spite of criticism inertia and active opposition by nature and man The possession of these essential qualities in *men constitutes leadership which is largely innate* but can to some extent be implanated by example, environment and inspiration

Example and environment are obviously extraneous circumstances but inspiration must by definition be derived from yourselves it can also be aided by reading the history of works of great men Around you in Roorkee you have many examples of the latter in regard to engineering achievement Speaking for myself I derived the greatest *inspiration from two sources firstly the achievements* of Col Cautley on his Ganges Canal and secondly the cruel contrast between the immense latent resources of the Himalayan range and the poverty of the cultivators in the dry tracts that lie shadowed beneath

This is not an irrigation lecture in which to bore you with figures but the following facts are in my opinion basic to your careers Nine tenths of our United Provinces population is agricultural and 7 10ths of these exist illiterate and very close to calamity The insecurity of their existence is due mainly to the hazardous rainfall of these localities The object of artificial irrigation is by equating

the moisture actually received from rain to the optimum requirement of the crop to ensure either better yields from existing crops or the growing of better crops in place of inferior ones Irrigation thus not only secures the existing cultivation of a particular tract but makes a better agricultural economy possible The surface water of the Ganges Jumna Ramganga and Sarda rivers has long ago been appropriated for existing irrigation The way has however been opened more recently to the extent of one million acres for economic exploitation on a vast scale of that hidden Ganges—the Saraswati, which as we know now and as your pundits knew long long ago, seeps silently through the sands beneath our feet to the sea In the mountain valleys above us within easy sight of where we sit today there flows to waste countless horse power which unless skilled enterprise and cool resource step in will remain for ever as spectacular clouds of ineffective foam

Let me urge you to think and act dynamically and to resolve to do your bit to combine these two great forces and thus render relief to countless millions of men and cattle now existing too near to death A few basic figures and I have done A rough computation suggests that taking the breadth of the Saraswati as 100 miles from Vindhyas to Himalaya and the depth of the Gangetic alluvial trough as half a mile not less than four thousand cusecs flow continuously beneath the thirsty plains In making this rough approximation we assumed that the water bearing layers in the alluvial substrata comprise one third of the aggregate depth of the various lenticular strata and further that some 40 per cent of the sand contains water We took the rate of flow as only ten (10) yards per day We must remember also that

Saraswati is reinforced throughout its course by rainfall on the ground above, it, by inflow from zones of much higher rainfall along its northern shore and lastly by similar seepage from the Vindhyan ridge to the south. It has been alleged that extensive sub-soil pumping in these provinces may result in depletion of the underground river to the detriment not only of our own lower canal systems but also of those of Bihar and Bengal. In reply one is tempted to point out that rainfall grows no less as we move south east both on the mountain flanks and on the plains themselves. Admitting therefore as we must, *that rainfall is the real source of supply it is* not clear to me why this hidden river should not be reinforced to an increasing degree as it moves ever forwards to the Bay of Bengal.

During my recent visits to Bihar and Bengal the question was raised as to the size of the sand in the alluvial aquifers as we advance eastwards to the delta. Would these finer grains be large enough to pass sufficient water *for tube wells in Bihar. Although it is true that in* general the sand grains decrease in size towards the Hoogly, we discovered that there are vast local patches of coarse sand on both flanks of the "Saraswati" in Bihar *and west Bengal where tributary streams join the Ganges* from the Himalaya and the Chotanagpur hills. Thus nature in a more beneficent mood has given opportunities to the Bihar and Bengal engineers to tap her water resources *for* the service of man. They are busy with this activity now.

As to power, you in the United Provinces are fortunate in possessing not only great canals like the Ganges and Sarda where by the way only 19 000 out of the 70 000 kilowatts available at the main fall have as yet been

developed Again, on a morning's air journey with Mr. Hutchinson the other day, we saw sites suitable for generating 120,000 kilowatts in but two tributaries of the Jumna river alone

It was most inspiring to glide out of the dust over the Siwaliks and see below us these blue lifelines bringing their message of hope from the dawn to weary cultivators toiling beyond the haze to the south Just imagine the potential reserves there are in the eastern Himalaya where the hydrological features are certainly no less hopeful How I envy you the task of developing these resources in the future for the benefit of the cultivator it is an engineer s privilege to aid

Remember the irrigation motto—

"He who causes two blades of grass to grow where only one grew before deserves well of his country"

The mountain power that overshadows Roorkee is capable of raising many million tons of new crops in places too where at present even grass dare not raise its head

Here then is your example and opportunity Much has been done in the west of India which will for ever stand to the credit of British administration—the Lloyd Barrage, the great Punjab canal systems, the Ganges and Sardah Canals, all of which either directly pay their way or stand for all time as vast "insurances" against scarcity and death But look beyond In your province alone the so called "Eastern Grid" project still lies pigeon holed—"stalled" as the airman says—where a static department consigned it in 1937 Away to the east less and less has been done partly because the more humid climate renders irrigation less remunerative but also—I fear— because of wishful thinking in that regard All we

can say to the eastern cultivators at present is what Clough wrote years ago to a frustrated world

> "And not by eastern windows only
> When daylight comes comes in the light
> In front the Sun climbs slow how slowly
> But westward look the land is bright

Yet it is but poor consolation to these neglected people to hear of the glamour of the west unless we intend to brighten the east also Here I repeat lies your life s work

I have dwelt at length on these potentialities for your service Have you borne in mind the reciprocal obliga tion which devolves on you to equip yourselves with learning and experience so as to control these vast acti vities effectively in the future? In a tour of only six weeks projects have been discussed to the tune of 1 million pounds worth of plant which will shortly be ordered

The answer to the question above will be furnished in the future by the operation of the widespread machinery on which millions of cultivators will soon depend for their existence in the Ganges valley alone These cul- tivators who on our advice will invest their tiny all—often borrowed at that—in plant seed and manure will be judges of the operating efficiency of your staff Remember the difference between electric irrigation and gravity canal In the latter with its slow moving water there is a time lag between an accident on the main system and its effect on the village In electricity the effect of a power breakdown on the system is instantaneous universal and calamitous There is thus latent disaster lurking in the hot winds of June in this new system of better living now being offered I will remind you of Lord Tennyson s

warning uttered years ago against neglect of British naval maintenance by the administration of the day—

> "Should you who have the ordering of the Fleet,
> At any time encompass her disgrace
> Whilst all men starve the wild mobs million feet
> Will kick you from your place
> But then too late, too late"

I need not press the comparison The "fleet" of more than 20,000 pumps which the power we have visualised can energise, will ensure the wheat supplies for vast millions in the Ganges plains just as the ships of England safeguard the nation's food. See to it then that the trust to be imposed in you is not betrayed

Lastly, just a word about that third quality resolution. Having made your plan and trained your men, considering all things, do not be deflected by critics actuated as they so often are by puny motives, but press on to the end Inflict your will on the project just as mechanised irrigation—unlike gravity canals—can be imposed on undulating country to the benefit of all land high and low alike And should you be finally frustrated in spite of all efforts; should advocacy, tact and dynamic pressure fail to overcome the inertia of, perhaps, too cumbrous and overhead machine; if you and your project must as a result to under, don't sink statically but go down dynamically with your guns blazing like the little "Zulu" off Tobruk.

I conclude with a reply once given to a question by a grand old landowner in a certain state when a tube-well

scheme was being debated "How do you know there is water underground?"

"We cannot know, we have not seen
But we believe the sands will yield
Their waters to the thirsty field
And all the desert turn to green"

It is for you now to write your careers on a dusty canvas in colours of pale green

Flt /Lt Sir William Stampe, C I E , then gave away the prizes

I have the honour to be,

SIR,

Your most obedient servant,

MADAN GOPAL SARDANA,

Principal.

APPENDIX I

Consolidated abstract of payments of Education Department in the United Provinces for the year 1942–43 *including March*, 1943 (*Final*)

Number of detailed heads	Heads of payments	Amounts		
	D—Government Professional Colleges (a) Civil Engineering College Roorkee			
	(1) College Department			
	Pay of officers	Rs	a	p
28	Principal (Voted)	1 44 00	0	0
30	Professors (Voted)	31 070	0	0
31	Other officers (Voted)	64 075	1	0
32	Medical Officer s special pay	600	0	0
34	*Deduct*—Recoveries on account of family allotment of officers (Voted)	(—)12 37	6	0
	Total (voted)	1 08 907	11	0
	Pay of establishment			
35	Instructors	3 120	J	0
36	Foremen Draughtsmen Mechanics etc	89 4	5	0
38	Clerks	10 896	6	0
39	Servants	6 990	6	0
40	Medical establishment	488	0	0
	Total (voted)	30 409	10	0
	Allowances and honoraria			
41	Travelling and other allowances (voted)	1 641	5	0
45	House rent and other allowances (voted)	6 517	11	0
45A	Compensatory dearness allowance	3 469	8	0
	Total (voted)	11 658	8	0
	TOTAL COLLEGE DEPARTMENT (voted)	1 50 875	13	0

APPENDIX I—(*continued*)

Consolidated abstract of payments of Education Department in the United Provinces for the year 1942-43, *including March* 1943 (*Final*)—(concluded)

Number of detailed heads	Heads of payments	Amounts		
		Rs	a	p
	Government Professional College			
	Contingencies (Non contract)			
47	Purchase and cost of erection of machinery tools and plants workshop	14 098	12	0
47A	Purchases and repair of cycle	9	0	0
	Laboratory			
49	(*b*) Purchases in India	5 643	10	0
50	Maintenance of generating stat on	4 49°	11	9
51	Survey expenses	6 132	14	6
52	Material for industr al class	388	5	6
53	Excurs on charges of students	799	13	6
54	Stores (in India)	50°	7	0
55	Prizes and fees	1 521	7	0
56	Other suppl es and services	4 464	3	0
57	Customs duty on stores	41	11	0
59B	Purchase in Ind a	32 494	15	0
60	*Contract*	8 068	14	6
61	Pay of men als	10 705	4	0
	Total	90 °64	0	9
	Total College Department (oted)	°41 139	13	9
62	(ii) *Deduct*—Contr bution from otl er Governments for training of students	(—)°0 496	0	0
	TOTAL ROORKEE COLLEGE (voted	°°0 643	13	9

APPENDIX I

Consolidated abstract of payments of Education Department in the United Provinces for the year 1942–43, *including March*, 1943 (*Final*)

D—Government Professional Colleges, (a) Civil Engineering College, Roorkee

(1) College Department

Number of detailed heads	Heads of payments	Amounts Rs.	a.	p.
	Pay of officers			
28.	Principal (Voted)	1,44,00	0	0
30.	Professors (Voted)	31,070	0	0
31.	Other officers (Voted)	64,075	1	0
32.	Medical Officer's special pay	600	0	0
34.	*Deduct*—Recoveries on account of family allotment of officers (Voted)	(—)12,37	6	0
	Total (voted) ..	1,08,907	11	0
	Pay of establishment			
35.	Instructors	3,120	9	0
36.	Foremen, Draughtsmen, Mechanics, etc. ..	89,14	5	0
38.	Clerks	10,896	6	0
39.	Servants	6,990	6	0
40.	Medical establishment	488	0	0
	Total (voted) ..	30,409	10	0
	Allowances and honoraria			
41.	Travelling and other allowances (voted) ..	1,541	5	0
45.	House rent and other allowances (voted) ..	6,547	11	0
45A.	Compensatory dearness allowance	3,469	8	0
	Total (voted) ..	11,558	8	0
	TOTAL, COLLEGE DEPARTMENT (voted) ..	1,50,875	13	0

APPENDIX I—*(continued)*

Consolidated abstract of payments of Education Department in the United Provinces for the year 1942-43, *including March* 1943 (*Final*)—(concluded)

Number of detailed heads	Heads of payments	Amounts Rs	a	p
	Government Professional College			
	Contingencies (Non contract)			
47	Purchase and cost of erection of machinery tools and plants workshop	14 998	12	0
47A	Purchases and repair of cycle ..	9	0	0
	Laboratory			
49	(b) Purchases in India	5 643	10	0
50	Maintenance of generating stat on	4 492	11	9
51	Survey expenses	6 132	14	6
52	Material for industrial class	388	5	6
53	Excurs on charges of students	799	13	6
54	Stores (in India)	502	7	0
55	Prizes and fees	1 521	7	0
56	Other supplies and services	4 464	3	0
57	Customs duty on stores	41	11	0
59B	Purchase in Ind a	32 494	15	0
60	Contract	8 068	14	6
61	Pay of menials	10 705	4	0
	Total	90 264	0	9
	Total College Department (voted)	241 139	13	9
62	(ii) *Deduct*—Contribution from other Governments for training of students	(—)20 496	0	0
	TOTAL ROORKEE COLLEGE (voted)	220 643	13	9

APPENDIX I—(*concluded*)

Consolidated abstract of receipts of XXVI—Education in the United Provinces, for the year 1942–43 *including March,* 1943 (*Final*)

Number of detailed heads	Heads of receipts	Amounts Rs	a	p
	F—Civil Administration XXVI—Education, Provincial			
	A—University			
503	Fees Civil Engineering College Roorkee	32 552	7	0
	E—General			
	Miscellaneous			
511	Examination fees Civil Engineering College	8 880	0	0
513	Workshops manufacture	67	0	0
515	Rent on buildings	12 830	0	0
517	Miscellaneous	*48 196	10	0
	Income from endowments	469	0	0
	Receipts other than revenue	93	3	0

* Electric light receipts	8 382	9	0
Conservancy tax	230	0	0
Water tax from students	1 543	6	0
Miscellaneous including water tax on residential buildings	6 140	11	0
Receipts on account of Technical Training Fee	31 900	0	0
Total	48 196	10	0

Statement of the annual accounts of the Thomason College of Civil Engineering Workshops, Roorkee, for the year 1941–42

Receipts	Amounts	Expenditure	Amounts
	Rs a p		Rs a. p.
Manufacture ..	51 15 0	Salariesrof Assistant P ofessor of Mechanical and Electrical Engineering	1,961 5 0
Electric light charges.	8,317 11 6	Salaries of Lecturer in Mechanical Engineering.	8,176 7 0
		Salaries of Lecturer in Electrical Engineering	4,195 14 0
		Salaries of Foremen and Assistant Foremen	5,973 2 0
		Salaries of Linesman	600 0 0
		Salaries of Storekeeper	420 0 0
		Salaries of Electrical Laboratory Attendant	420 0 0
		Salaries of Electrical Laboratory boy	189 14 0
		Salaries of Mistri, Water works	450 0 0
		Salaries of Workshop Guards.	748 12 0
		Compensation to Abdul Bari, Fitter	462 0 0
		Travelling allowance	12 12 0

Statement of the annual accounts of the Thomason College of Civil Engineering Workshops, Roorkee, for the year 1941–42—(continued)

Receipts	Amounts	Expenditure	Amounts
	Rs a p	*Manufacture*	Rs a p.
		Non contract Contingencies Purchase, and Erection of Machinery Workshops.	12,709 1 0
		Maintenance of Generating Station	4 499 11 3
		Laboratory and class charges	392 4 6
		Electrical Laboratory.	518 14 0
		Cost of energy .	7,881 10 0
		Maintenance and repairs (Water works)	1,499 15 9
		Special grant cost of energy, consumed on tube wells	400 0 0
Total ..	8,369 10 6	Total ..	51,541 10 6

Manufacture account

(Including credit sales of stock and instruction charges for students)

Receipts	Amounts	Expenditure	Amounts
Cash receipts ..	51 15 0	Opening balance ..	1 2 0
Unrealized balance	45 6 0	Labour .	32 6 0
		Stock (including credit sales)	10 2 5
		Direct charges ..	47 13 7
		Profit on private works	5 13 0
Total ..	97 5 0	Total ..	97 5 0

Stock account

Receipts	Amounts	Expenditure	Amounts
Opening balance	778 3 6	Issues to works including credit sales	10 2 5
Cash purchases ..	.	Closing balance ..	768 1 1
Total ..	778 3 6	Total ..	778 3 6

Statement of the annual accounts of the Thomason College of Civil Engineering Workshops, Roorkee, for the year 194 -42—(concluded)

Receipts	Amounts	Expenditure	Amounts
	Energy account		
	Rs a p		Rs a. p
Cash receipts .	8,317 11 6	Cost of energy	7,88 10 0
Unrealized balance	127 14 6	Profit	564 0 0
Total ..	8,445 10 0	Total .	8,445 10 0
	Tools and plant account		
Opening balance	70,464 10 0	Depreciation and transfers, etc	13,526 1 0
Difference of previous balance	20 0 0	Closing balance	58,564 7 0
Purchases during the year	1,605 14 0		
Total	72 090 8 0	Total	72 090 8 0

TABLE I

Statement showing comparative results of entrance examinations for five years

Name of class	1938			1939			1940			1941			1942		
	British	Indians	Total	British	Indians	Total	British	Indians	Total	Europeans or Anglo-Indians	Indians	Total	European or Anglo-Indians	Indians	Total
Civil Engineer Class															
Examined	1	*108	*109	3	91	94		114	114	2	161	163	4	224	226
Passed	1	*41	*42	1	43	44		37	37		30	30		51	51
Admitted — Privileged	1	32	33	1	30	31		30	30		30	30		30	30
Admitted — Unprivileged		1	1					3	3	1	5	6		6	6
Overseer Class															
Examined		25	257		280	280		283	283		319	319		272	272
Passed		74	74		87	87		87	87		63	63		57	57
Admitted — Privileged		40	40		46	46		41	41		40	40		40	40
Admitted — Unprivileged		3	3		4	4					6	6		3	3

TABLE II

Civil English and Indian candidates including Defence Department from 1922 to 1942

Provinces	Came up for the examination		Passed the entrance examination		Passed the final examination		Total of all classes		
	Engineer Class	Overseer Class	Engineer Class	Overseer Class	Engineer Class	Overseer Class	Came up	Passed the Entrance examination	Passed out
United Provinces	1 903	3 966	431	1 128	287	634	5 869	1 559	921
Punjab	1 113	31	271	6	218	2	1 144	277	220
North West Frontier	27	7	5		5		34	5	5
Bengal	9		1		1		9	1	1
Central Provinces	52		4		5		52	4	5
Burma	5		3		3		5	3	3
Central India	1	4	1	1			5	2	
Rajputana	15	16	3	2	1	1	31	5	2
Baluchistan	2	1					3		
Indian States	70	50	15	18	6	14	126	33	20
Bihar and Orissa	9	1	1		2		10	1	2
Delhi	65	12	12	1	8		77	13	8
Ajmer Merwara	17	24		8		6	41	8	6
Defence Department	*16*	*4*	*12*		*6*		*16*	*12*	*6*
Madras	1						1		
Assam	1						1		
Total	3 312	4 112	75[illegible]	1 164	54[illegible]	657	7,4[illegible]4	1 9[illegible]3	1 199

NOTE—For figures from 1880 to 1921 *see* Thomason College Calendar for 1930

TABLE III

Comparative statement showing numbers in College on 1st April of each year

Name of class	1939			1940			1941			1942			1943		
	British	Indians	Total	British	Indians	Total	British	Indians	Total	Europeans or Anglo-Indians	Indians	Total	Europeans or Anglo-Indians	Indians	Total
Civil Engineer Class	1	90	91	2	87	89	2	94	96	1	97	98	1	104	105
Apprentice Overseers	..	9	9	..	7	7	..	7	7	..	..	..	..	..	..
Overseer Class	..	90	90	..	91	91	..	87	87	..	84	84	..	90	90
Draughtsman Class	..	19	19	..	24	24	..	25	25	..	20	20	..	18	18
Total ..	1	208	209	2	209	211	2	213	215	1	201	202	1	212	213

TABLE IV

Comparative statement of religious denominations of the staff and students

Class	1938–39				1939–40				1940–41				1941–42				1942–43			
	Christians	Hindus	Muhammadans	Total	Christians	Hindus	Muhammadans	Total	Christians	Hindus	Muhammadans	Total	Christians	Hindus	Muhammadans	Total	Christians	Hindus	Muhammadans	Total
aff	3	31	3	37	1	30	5	36	1	29	5	35		31	5	36		32	5	37
udents	2	176	22	200	2	180	22	204	2	176	30	208	2	171	29	202	1	187	25	213
pprentice Overseers		9		9		7		7		7		7								
Total	5	216	25	246	3	217	27	247	3	212	35	250	2	202	34	238	1	219	30	250

TABLE V

Comparative statement showing the transactions of the various College funds from 1st April, 1942 to 31st March, 1943

(The property of the funds is excluded)

Name of fund	Balance on 1st April, 1942	Receipts during the year 1942–43	Total	Expenditure during the year 1942–43	Balance on 31st March, 1943	Remarks
Civil Engineer Class	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	
Recreation ..	2,377 2 4	8,553 12 3	10,930 14 7	8,659 4 3	2,271 10 4	
Club	1,416 6 3	4,741 4 2	6,157 10 5	4,149 12 0	2,007 14 5	
Mess (Common) ..	1,055 4 2	1,028 2 1	2,083 6 3	906 4 9	1,177 1 6	
Passing out scholarship for Europeans.	1,140 15 2	263 5 1	1,410 4 3	250 0 0	1,160 4 3	
Overseer Class						
Recreation and Club	2,010 2 8	2,666 8 1	4,676 10 9	2,484 5 9	2,192 5 0	
Boating.. ..	3,455 5 5	1,534 5 7	5,039 11 0	348 0 9	4,691 10 3	

TABLE VI

Statement showing the number of candidates registered and the number who have obtained employment during 1938 to 1942

Grade	1938		1939		1940		1941		1942	
	Registered	Appointed	Registered	Appointed	Registered	Appointed	Registered	Appointed	Registered	Appointed
Engineers	8		2	6	2	1	1	2		
Upper Subordinates										
Overseers	13	3	10	8	2	4	17	10		
Lower Subordinates					2	1		1		
Draughtsmen	1		3		2	1		2		
Total	22	3	15	14	8	7	18	15		

TABLE VII

Statement showing applications and appointments of candidates during the year 1943

Gone to	Railways	Military works	United Provinces: Provincial	United Provinces: Irrigation	United Provinces: Municipal and district board miscellaneous	Punjab: Provincial	Punjab: Irrigation	Punjab: Municipal and district board miscellaneous	Delhi	Bengal	Bombay	Madras	North West Frontier Province	Miscellaneous	Local administration: Assam	Local administration: Bihar and Orissa	Local administration: Central Provinces	Local administration: Berar	Native States	Miscellaneous	Total
Applications from employers																					
Engineers	1				1																2
Overseers	6	10		2	4														5	3	30
Draughtsmen	2			1	1			3													7
Total	9	10		3	6			3											5	3	39
Appointments through College																					
Engineers																					
Upper Subordinates																					
Overseers																					
Lower Subordinates																					
Draughtsmen																					
Total																					